The Builder.

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ILLUSTRATIONS.

The New Bells and Bell-cage, St. Paul's Cathedral, London 1068

Monument to the late Lord Lyttelton, Worcester Cathedral.—The late Sir G. G. Scott, R.A., Architect; Mr. J. Forsyth, Sculptor 1069

CONTENTS.

The British Museum and Advancement of Popular Knowledge.. 1065
The Sequel of the Opening of Waterloo Bridge 1068
Suggestions for the Institute 1069
Queenaferry and Inchgarvie 1069
Disfigured Streets and Buildings 1069
Edinburgh 1069
Oban Now and Then 1069
Why the Death-rate is not Lower 1069
Lead Poisoning 1069
Hospitals for Infectious Diseases 1069
Experiments in Paving in the City 1069
Messrs. Epps's New Cocoa Mills 1069
Mountain Railways 1069
The New Sewage Works for the Croydon Rural Districts 1069
The New Bells for St. Paul's Cathedral 1069
Monument to the late Lord Lyttelton, Worcester Cathedral.... 1069
Anomalies in Architect's Practice 1071
Manchester School of Art: New Premises 1071
A Memorial Fountain at the East End 1071
Death of Sir Francis Grant, P.R.A. 1072
Obituary 1072
Liverpool Art Club 1072
Art Exhibitions 1073
Archæological Societies 1072
The Electric Light 1073
Drury Lane Theatre 1073
Allhallows' Church, Tottenham 1073
Testing Lightning Conductors 1073
Exhibition of Sanitary Appliances 1074
The Obelisk 1074
State of the Thames 1074
Sewage in the Thames 1074
Masters and Men 1074
The Smoke Nuisance 1075
Abuse of the Green Park 1075
Art "Dodgick" 1075
The "Steam Navvy" 1075
Lyme Regis, Dorset 1076
The "Archimedean" Screw Ventilator 1076
Tramway Sleepers 1076
Fire-resisting Ceilings 1076
Bridge over the Thames 1076
Who's to Pay the Clerk of Works? 1076
Alleged Conspiracy by Workmen: Fraudulent Time-sheets.... 1076
"Keeping a Day's Pay in Hand": Baker v. Taylor 1076
Arbitrations 1076
Surveyorship Items 1076
Drawing Classes for Workmen 1077
Accidents 1077
Variorum 1077
Miscellanea 1077

The British Museum and the Advancement of Popular Knowledge.

IT the close of the merry days which a Charles II. sufficed to make illustrious,—in the great age of Louis Quatorze, when Colbert was founding academies of literature, science, and art,—in the days, merry for England, when France was the centre of the enlightened world and French the language of refined Europe, a national collection of books would have been, in the eyes of the great mass of the British public, quite as much an old curiosity-shop as most of the objects and antiquities in the British Museum now appear to them. In rural districts books were then unknown. "Few knights of the shire," says Macaulay, "had libraries so good as may now perpetually be found in a servants' hall or in the back parlour of a small shopkeeper." A lady of the manor and her daughters were satisfied with the orthodox literature contained in a prayer-book and a receipt-book. "No circulating library, no book society, then existed even in the capital"; as late as 1724 circulating libraries were unknown in London, but there was always a crowd at the booksellers' shops. At the end of the reign of Charles II. the metropolitan student frequented the booksellers' shops around St. Paul's Cathedral, and, to quote Macaulay again, "A known customer was often permitted to carry a volume home." Two hundred years ago libraries were, it is true, formed in the homes of a few rich and comparatively learned men, but such places were inaccessible to any but personal friends. Some forty years later Dr. Johnson had the rare privilege of visiting occasionally the library at "the Queen's house," in St. James's Park, where Buckingham Palace now stands. One day King George III. graciously caught the Doctor at his studies,—a circumstance which Boswell describes as one of the most remarkable incidents of Johnson's life. That was in February, 1767. Yet, barely eight years before, an amazing collection of MSS., books and rarities of various kinds, had been opened for "publick use to all posterity"; and in the manner of a time, which, by-the-bye, has only recently died out, "publick use" then meant the use by that portion of the public possessing pluck and interest enough to overcome the troublesome obstacles with which red tape and a visionary body of sham trustees fenced "the National Repository."

How the National Repository was formed—many years before the National Gallery had any existence—is soon told, and the name that should be perpetually linked with it is that of Sir Hans Sloane. About a hundred years after the most brilliant period of the great age of France and Europe, the British Legislature accepted an offer from Sir Hans Sloane of his celebrated library and collection of curiosities. They had cost him at least 50,000*l.* to obtain, and for them he or his executor was satisfied with about 20,000*l.* It was creditable to the George who loved neither "boetry nor bainting" that he permitted his ministers to perpetrate such a deed of apparent extravagance. The same Act of Parliament that authorised this acquisition further directed the purchase of a collection of MSS. belonging to the Earl and Countess of Oxford, and collected by their greater relative Robert Harley; it also ordered that the famous Cotton Library, which was housed along with Major Edwards's library—near where the Westminster clock-tower now rises—should form, with the collection of Sir Hans Sloane, the future British Museum. George II. did even more than acquiesce. He presented to the nation—then a mere phrase—the royal library, collected from the time of Henry VII., and, with it, transferred the privilege, acquired under Queen Anne, of being supplied with a copy of every publication entered at Stationers' Hall. Thus, in 1759, was opened to the public the British Museum, consisting of three Departments:—one of Printed Books, another of MSS., and a third of Natural History.

SOMETHING ABOUT THE BUILDING.

That same Buckingham House, in which Johnson had conversed with the king, was at first designated as the best place for the National Repository, but thirty thousand sterling pounds were asked for it, whereas Montague House could be obtained for ten. Now the latter was one of the famous houses of the metropolis. It had been built at the close of the seventeenth century upon the smouldering ruins of a French palace erected by the Duke of Montague; it had been designed and its construction superintended entirely by Frenchmen. Bordering the great Bedford estate, adjoining Bedford House and the celebrated Bloomsbury-square, then one of the wonders of the world, no better home could have been chosen. It became the National Repository. But the second Montague House was not destined to exist long. Before the present century had seen the years of a generation, Sir Robert Smirke was building a new British Museum, and in 1845 not a vestige of the old French-designed edifice remained. It is a little late to say anything disparaging of the exterior of the present building, the front of which is composed almost entirely of a Grecian portico long since voted—to use the words of a well-known critic,—"a public nuisance." Indeed the grand front, behind the colonnade, of the British Museum is almost entirely composed of rooms for the trustees and officials and of an entrance-hall. Within the building the chief feature,—and a feature to which the arrangement of the interior was sacrificed,—was the once splendid quadrangle. The proper place for the great staircase was undoubtedly exactly opposite to and facing the entrance-doors, where in fact the new Lycian room has been just placed, on either side of the door leading to the present Reading-room. But there it would have spoilt the view of the Quadrangle. The new building had been occupied only a few years when it was found to be too small for both men and things. The great quadrangle to which convenience had been sacrificed was itself sacrificed; a new Reading-room,—a marvel and a delight at all times, but a very snare for bronchial affections nine months in the year—was planted within it. About the same time the position of the grand staircase was discussed by the officials in charge. Mr. Edmund Oldfield and Mr. Panizzi made a plan showing how the staircase ought to be removed to the vacant space between the entrance-hall and the new Reading-room; and how it would there face the entrance-doors, leaving a broad passage to the door of the Reading-room. In such a position the staircase would have led to the first-floor galleries, logically right and left, instead of, as at present, to only one side of the building. The large space now occupied by the staircase would have been transformed into two splendid sculpture galleries, one on each floor, and each possessing a north light. It may be asked why we hark back to that which was not done, and which has been regretted over and over again. We hark back to it because the country has just been saddled with a bill for 21,000*l.* to effect a monstrous blunder: to put in the very spot where a new grand staircase ought to have stood a hall for antique sculpture which cannot, by any ingenuity, be lighted as it should be lighted; and to leave in its present position a huge and cumbrous staircase which impedes circulation above and divides, or at least cramps, the space for antiquities below. Moreover, as has been stated in evidence, there is hardly a hall or gallery in the British Museum that is now devoted to the purpose for which it was designed. One room, however, which was built expressly, at a great cost, to hold the Lycian collection, was known to be an exception to the amusing rule; and within this year even that room has been dismantled to compose an incongrous collection of restored stones and dubious models misplaced in two open lobbies miscalled the Lycian gallery. The total estimate for the erection of this gallery and a smaller one over it, together with alterations consequent thereon, is 21,000*l.*,—an outlay incurred in defiance of evidence accumulated before Royal Commissions and Select Committees, at the bidding of trustees who have not time to understand the matter, and under the control of a Principal Librarian, whose province is the care of books. Her Majesty's architects are spending the money and superintending the works. A little forethought on the

part of the Office of Works, with the influence such an office is known to possess, might surely have remedied the acknowledged defects of the British Museum Staircase, and without a larger expenditure than the present estimate. At least, there would have been gained two new galleries in the very spot where they are most required; and had such an improvement cost more than 21,000*l.* the money would not have been grudged, or lamented over as many who know lament over it now.

THE STORY OF MISMANAGEMENT.

When the impartial critic or the intelligent foreigner, in search of the truth, has waded through the historical records of more than one noble institution which helps to make the glory of this prosperous country, both critic and foreigner must often arrive at a helpless conviction that the story told therein is one of good intentions thwarted, of unblemished integrity misdirected, of thoroughly honest and triumphant goody-goodyism encouraged and protected by the State. "What can be done to move forty-five illustrious gentlemen who are unpaid?" That was the counter-reply made by Sir Henry Cole to a question put to him by one of the great unpaid who was a Royal Commissioner, sitting in 1871 to hear evidence on scientific instruction and the advancement of science. The aforesaid illustrious gentlemen to whom Sir Henry alluded were the trustees,—now swelled to the number of fifty,—of the British Museum; how they came to reign over the national repository of MSS., Printed Books, and Natural History, is seen in the fact that such was the original government in 1759, and such is it now. The tardy innovation of a public library for London was not effected without due regard on the part of Parliament for its future care and trust. The Act of 1753, which authorised the purchase of Sir Hans Sloane's collection, appointed twenty-seven trustees, who were enjoined to elect and nominate fifteen other persons to be associated with them in the execution of the trust. The same Act made these gentlemen, drawn from the highest ranks of society, a corporate body, and placed in their hands the sum of 100,000*l.*, raised expressly for the purpose by a public lottery. The Act also decreed that the chief officer or general manager of the Museum should be appointed by the sovereign from two persons to be recommended to him by at least two of the three principal trustees, and that all the other officers and servants should be nominated and appointed by at least two of the three principal trustees, which said trustees were to be for ever and ever,—

1. The Archbishop of Canterbury.
2. The Lord Chancellor.
3. The Speaker of the House of Commons

In so splendid a manner was the trust inaugurated. So reverently has it been maintained that a gentleman in authority,—one not given to jesting,—was able to declare before the Royal Commission aforesaid that "persons drop from the clouds" into sacred posts, be they those of officer or servant, within the Museum precincts. Nevertheless, during nearly the whole of this century, there have existed doubts in the minds of many,—even of some of the trustees,—as to the efficacious working of an irresponsible trust. In the years of grace 1835-36, Mr., afterwards Sir Benjamin, Hawes got up an inquiry on the subject, and a Select Committee of the House of Commons sat to hear evidence. On the 14th of July, 1836, they reported to the House, and amongst other equally weighty remarks they said:—"That though the number of official trustees may appear unnecessarily large, and though practically most of them *rarely if ever* [the italics are our own] attend, yet no inconvenience has been alleged to have arisen from the number." This extraordinary effort of logical judgment on the part of a Select Committee sufficed to allay any agitation that had cropped up with respect to the trust of the British Museum until the year 1850, when several facts of a more or less amusing nature were duly inscribed in the records of the British Parliament. Then a Royal Commission, consisting of twelve persons, among whom were the Lords Ellesmere, Seymour, Canning, and Wrottesley, Sir Roderick Murchison the geologist, Joseph Hume the economist, Samuel Rogers the poet, Sir Philip de M. Grey Egerton, and the present Lord Houghton. An important revelation was elicited by these Royal Commissioners. It appeared that in 1755 the trustees, then forty-seven in number, had appointed from among themselves a standing committee with powers to manage the ordinary business of the trust and to report thereon to the general body of trustees. This standing committee had been acknowledged, referred to, credited with special duties, from 1755 to 1850; but, during the space of ninety-five years, no standing committee had ever been appointed except that which originally sat in 1755. For the period of at least three parts of a century the standing committee had been confounded with the general board, the majority of which, according to the Report of 1836, "rarely, if ever," attended. The Report presented to the Queen by the Royal Commission of 1850 was one of singular ability, masterly and exhaustive in the treatment of details. The Commissioners did not content themselves with stating what had, or rather had not, occurred at the British Museum during the ninety-one years it had been opened for public use and study. They suggested a radical change:—"With respect to the executive management," said they, and in italics, just as we print the words, "your Commissioners are *unanimously of opinion that a change should be adopted, involving the abolition of the offices of Principal Librarian and Secretary as they now exist, and the establishment of a responsible executive council.*" This was definite and conclusive—quite unlike the ordinary Report of conventional Royal Commissioners. These of 1850 went even further. They described the kind of executive council they would like to see; they defined some of the duties of such a body. Two of its ordinary members were to be appointed by the Crown and to be paid a salary. This suggested executive council was to appoint the officers and servants of the Museum, and to submit such appointments to the approval of the Secretary of State.

Obviously, the Report was shelved, and except that a well-bound copy lies secreted in bin 2,048*g* of the Museum Reading-room, the Report and the minutes of evidence which provoked it, are conveniently forgotten. Nevertheless, it had a momentary effect upon the trustees themselves. A standing committee, after having lain for nearly a century in abeyance, was re-appointed; it was re-intrusted with the ordinary business of the Museum, but with what result will be seen a little further on.

It is needless to add that since the year 1850 several Select Committees, not to mention the Government itself, have sat upon the trustees of the British Museum. Only ten years afterwards Mr., now Sir Antonio, Panizzi, was examined by Mr. Lowe on the subject of Museum administration, and Mr. Panizzi very plainly told the Select Committee of 1860 what was wanted. "Supposing the trust to be preserved," said he, "the best alteration in the management of the Museum would be to have another person in my position as Principal Librarian. There ought to be a much higher person than I am; he ought to be a trustee in virtue of his office, and I should say even chairman of trustees, and have a great deal to say to everything that was done there." Whatever good things exist for the benefit of the public at the British Museum may be traced to Mr. Panizzi, yet he said to the Select Committee:—"It is not an humble individual like myself who can manage that establishment." Mr. Lowe then asked if any member of the Government ought or ought not to be present at the meetings of trustees, and Mr. Panizzi's reply was,—"Certainly, the very constitution of the Museum is founded upon that, that the Government should have the whole control of it." It may, however, be maintained with apparent exactness that the Government already have the entire control of it, or at least they can, when they choose, control it. The trustees, whose very weakness makes their strength, are masters while the "how not to do it" principles remain to be defended; when anything has to be done, the Government can snap fingers at the trustees, and do it. Witness what occurred in 1864. In the first month of that year, an advertisement appeared in the newspapers, informing architects that the Commissioners of H.M.'s Works and Public Buildings were prepared to receive designs for two new Museums at South Kensington. This announcement fell in Great Russell-street like a thunderbolt. The Principal Librarian energetically collected the forty-eight trustees; the forty-eight trustees flocked feebly to the call of the Principal Librarian. We have in our mind's eye his Grace of Canterbury taking water at Lambeth to consult the Lord High Chancellor rooted as it were to the Woolsack, and the latter sending a special "chit" to the Right Honourable the Speaker, fixed fast to the chair of the Commons. The thing was, indeed, so unprecedented that a quorum of the Standing Committee of the forty-eight trustees met and immediately burst into a resolution intended to avert the treachery that was now patent in the official camp. The Superintendent of the Natural History Departments having humbly confessed that he had, unknown to the Principal Librarian, conversed with H.M.'s First Commissioner of Works, the quorum of the Standing Committee of trustees deplored the fatal occurrence. The Standing Committee having learned that certain communications had passed between members of Her Majesty's Government and certain officers of the Museum,—

Resolved, "that all such communications relating to the government, management, buildings and collections in the Museum ought, in the first instance, to be made through the Principal Librarian, and by the Principal Librarian submitted to the trustees."

There was a tinge of rosy office in the resolution; reports, letters, inclosures followed. The soothing hand of time passed over the ruffled quorum of trustees. The Principal Librarian relented, the Superintendent of the Natural History collections repented, men were forgiven, and events forgotten. A few years afterwards, Mr. Norman Lockyer revised the proofs of 14,533 paragraphs, large and small, which formed the evidence collected, from 1871 to 1874 inclusive, by a Royal Commission on Scientific Instruction and the Advancement of Science. These Commissioners dealt, in their fourth report, with the British Museum, and in paragraph 10 they made the following statement:—"It has accordingly been recommended by various witnesses that the British Museum should be placed under the direct control of some responsible Government authority,—a Minister of Public Instruction, if such an office be created; or, in existing circumstances, the Lord President of the Council." Four years afterwards, on the 13th of August, 1878, a Conservative Legislature, red with the annexation of Cyprus, broke the tie that bound the three Departments of which the British Museum was composed when it started into being six score years ago. But the Act to which we allude, smuggled through both Houses at the very close of the session just departed, reforms nothing in the management or the organisation of the Museum, or the control of expenditure; it merely enables fifty trustees to mismanage two public buildings instead of one: to re-arrange the Natural History collections in the new building at South Kensington, where they may continue to govern with a quorum of the Standing Committee, and where the triple heads of Church, Lords, and Commons, may dispose partly in imagination the patronage of office as before,—to the foolish detriment of public education and the needless swelling of the common burden.

AN EXPERIENCED TRUSTEE: HIS OPINIONS.

We have casually alluded to the re-appointment, after the disclosures of 1850, of that Standing Committee which had lain in abeyance for almost a century; it was then again intrusted with the ordinary business of management, and ordered to report thereon to the general body of trustees. According to the testimony of an experienced trustee,—Sir Philip de M. Grey Egerton,—given before the Royal Commissioners of 1871-74,—this Standing Committee attended very regularly between 1850 and 1870, the two periods of Royal inquiry. The result, however, was not so practically beneficial as it might at first sight appear. During those twenty years only one vital question involving reform was deliberately decided upon by the Standing Committee, and that was immediately vetoed by the general body of trustees. Sir Philip shall tell the story in his own words. In describing "the only vital question" settled by the Standing Committee, he says that "the general policy of the Museum, adopted the year after by those trustees, who were presumably best qualified to judge, was set aside by a general meeting, of which the majority was composed of *ex officio* members," that is to say of trustees who never attended to see what was deing done or left undone on behalf of the trust voluntarily or involuntarily accepted by them for the good of the nation. To be more explicit, "the only vital question," which had been settled by those few trustees who had taken

the trouble to execute the trust, was arbitrarily set aside by the larger number, who had virtually taken no trouble to inquire into its working,—in other words, into the management of the Museum. Sir Philip was further asked a very pertinent and important question. The statutes declare,—"If any trustee shall give no attendance for a year, that circumstance shall be equivalent to a resignation of office." Yet it was possible for Sir Philip de M. Grey Egerton,—described by Royal Commissioners as a most experienced trustee,—to make in 1871 the following solemn statement:—"Both the present Speaker and the former Speaker attended very regularly *when they could get away from their other duties*. The late Archbishop attended very constantly; the present Archbishop I have not seen *so often*,—his health has not been good. *The Lord Chancellor I never saw there in my life.*" Now Sir Philip was and is one of the most experienced trustees; and while referring, before the same Royal Commission of 1871, to the reforms thought to have been effected by the Report of the Commissioners of 1850, added,—"I am not satisfied with the present system, because, when the British Museum was put under the general Act, all the candidates for office were required to undergo examination." That is to say, the British Museum, being a public department raised and augmented by public money, ought to be subjected to the rules and practices enforced by the Civil Service Commissioners. Instead of which it is said to be, as Sir Henry Cole told the Commissioners of 1871-74, "the refuge of all the invaluable butlers that gentlemen are grieved to part with,"—a piece of evidence that is sadly confirmed by an inspection of many of the subordinate officers and attendants even at the present hour.

OUR VISIT AS ONE OF THE PUBLIC.

Having a sort of innate presentiment, engendered from the weary looks of the uncultured part of the population seen issuing from the National Repository in Great Russell-street, that the British Museum is not the best place in which to spend a happy day, we lately paid a tentative visit to its halls and galleries. Our first duty was to purchase the guide-books printed "by order of the trustees" for the instruction of the people. On payment of 3s. 7d. we obtained thirteen volumes 8vo., and one volume 16mo. Armed with these, we proceeded with some confidence to deliver up the accustomed umbrella. On opening the largest of the volumes, all carefully sewn in paper covers, we found it to be "A Guide to the Exhibition-rooms of the Departments of Natural History and Antiquities," price 6d.; we perceived at once that this is really the popular instructor prepared by several contributors who have signed their names respectively at the end of the different articles. Our first duty was to read Mr. J. Winter Jones's preliminary account wherein the visitor is instructed to ascend the principal staircase in order to see all the collections described,—among them the Antiquities which are on the ground-floor and in the basement. This was so puzzling that we referred to Mr. A. W. Franks's contribution about the Antiquities, and there we found:—"The peculiar form of the galleries has made it necessary to place the most ancient remains at the north-western extremity, which is farthest from the entrance-hall; so that a visitor wishing to pursue the more *natural historical* course (that is obviously a course through the *Natural History* galleries) is recommended to descend the north-western staircase from the gallery of minerals and fossils on the upper floor, and enter the ground-floor by the Egyptian vestibule." This was a strange thing to read at the very entrance-doors of the building; it also implied the possession either of a mariner's compass, or an intimate knowledge of the locality. It was still funnier to read the end of the sentence from which we have just quoted, telling the visitor to proceed "through each apartment in the reverse order to that adopted in the description." Imagine the condition of the untutored mind on receiving an intimation to read a popular guide-book on the Hebrew system of printing, whereby the last page of the book is the first,—instead of the vulgar European method of recent centuries. Well, we found the grand staircase, and after having marvelled how the statue of the Hon. Mrs. Seymour Damer, holding Thames in her hand, got to be mixed up with Shakspeare and Sir Joseph Banks in the entrance-hall, we reached the Zoological collections. Not far from the entrance to these galleries we requested an attendant,—nodding in a corner, with his wand of office reposing at a little distance,—to direct our course in a north-westerly direction. This was of the utmost necessity; for, had we followed the natural bent of what passes for the ordinary public mind, we should have reached the north-eastern staircase, and descended into the vestibule leading into the King's Library. On reaching the first-floor, it is necessary to turn sharp round,—thereby missing all the eastern galleries,—to reach the north-western staircase. But to return to our fourteen volumes, particularly the sixpenny guide. Therein is the zoological contribution, signed "Albert Günther," doubtless the same gentleman who stated in evidence, before one of the Royal Commissions or Parliamentary Committees, that the British Museum "was far in advance of all other museums in respect of catalogues." So it may be in the matter of scientific catalogues; they were, however, of no use to us, for we went as one of the public expecting to be taught, or at least to be assisted in attempts to learn. We looked first at the announcement over the door of the room in which we were standing, and found that it was the Southern Zoological Gallery; then at our guide-book, wherein, at page 4, there is a description of the cases containing llamas and camels. The latter, it appears, are "remarkable for their stomachs, complicated with cells for holding water, and for their humps, which are stores of nutriment whereby they are fitted for long journeys across the Desert." This extraordinary description is no doubt perfectly intelligible to a naturalist, but we, being merely one of the populace, looked perplexedly at the animals in question, and wondered whether they stored food under or upon their humps, or whether, being in the Desert together, they fed off each other's humps, moistening the repast with the water they carried in the cells of their stomachs. Then there follows a description of thirteen cases containing oxen; all the animals concealed therein are jumbled up in a general description, ending with three lines of print about the sloths, which have to be sought for in the thirteen cases aforesaid. The Mammalia Saloon afforded some consolation. Cases 21 to 51, while protecting from public appreciation most of the carnivorous quadrupeds, have enabled the Guide to descend, in details of description, to the level of the plebeian intellect. The carnivorous quadrupeds, we are told, "are particularly organised to live on flesh, and most of them catch or kill their prey." Then, again, the badgers. They are, according to the same informant, "very strong creatures, living in holes, which they dig in the ground." We hastily retreated to the Eastern Zoological Gallery. There we found, in case 57, the fly-catchers, "so named from their feeding on insects, which they capture when flying"; and again, in the same room, case 135 contains the flamingoes, which are described as the longest-legged of the web-footed birds. But this truthful description is followed by a unique sententious statement, more fitted for a work on the Descent of Man than a dry guide to a Zoological Museum. According to Dr. Günther, "ancient epicures regarded their tongues as a most luxurious dish." The contents of the Northern Zoological Gallery do not afford equal pabulum for critical mirth; still, in these days, when the appetite for burlesque is keenly developed, we cannot omit to signalise the description of a snake's nose, which would have delighted the English translators of Euclid. It refers to the "tree-snakes, called from the length of their bodies, the Coach-whip Snakes; one kind has the nose much *produced*." After all, a snake, like a line, is length without breadth, and is not that the mathematical description of a line? Why should not a snake,—and if a snake, therefore a snake's nose,—be "produced" in a like fashion? The same remark may be applied to eels. In case 26, according to our Guide, may be seen "the great Salamander from Japan, the Siren of Carolina, which looks like an eel with front legs." Now, in the course of a varied and lengthened existence, a good deal of technical description has passed through our hands. For a naturalist to tell Muggins or Mike that the salamander,—the badge of François Premier,—is nothing more than the Siren of Carolina, or an eel with front legs, is alike refreshingly simple and sagaciously instructive. It must equally astonish, not only the plebeians aforesaid, but even scientific men, to learn from Dr. Günther, without further explanation, that "some of the most interesting sponges are creatures," and that others belong to "a class of mostly microscopic beings."

Mr. Franks's advice to those who wished to see the antiquities on the ground story, was to ascend the grand staircase, and descend the back stair at the north-western extremity of the building. We followed it, and found ourselves in the northern vestibule of the Egyptian galleries. There we determined to discard the general guide, price 6d.; and to consult another volume, price 2d., entitled "A Guide to the Egyptian Galleries in the Department of Oriental Antiquities." It contains thirty-nine small octavo pages, and a note by Dr. Birch, stating that "each object in the galleries has a number attached to it, with a description of its purport, and the dynasty under which it was made." So far so good; but though the guide to the Egyptian galleries contains a notice of the religion, architecture, and sculpture of the Egyptians, it describes only the objects exhibited in the northern vestibule, which is a comparatively hidden recess containing a superficies of about 700 square feet, whereas the Egyptian galleries cover an area of about 25,000 superficial feet. In them the objects exhibited are, to the scientific and unscientific student, the popular or plebeian visitor, totally undescribed in any guide or handbook whatever published by order of the trustees. There is, it is true, a short notice of the Egyptian galleries in the sixpenny guide-book, but the description it contains is of the following character:—"Hieroglyphics," it says, "are characters which are all representations of visible objects, and are generally executed with great care and finish." Nor are some of the other keepers much more desirous to assist the public with lucid writing. Even Mr. Newton describes the celebrated Propylæa as "*a building* which *stood* at the entrance to the Athenian Acropolis."

There is one room on the first floor not without its amusing peculiarities. The door to it, like that of the Print-room, is always closed, and the presumptuous visitor awakens attendants within by pulling a bell. This is the Gold Ornament-room, into which people enter through a narrow passage containing on one side books relating to gold ornaments, gems, and coins; on the other, a table for the public exposure of certain catalogues. One of the latter we, of course, having purchased the whole collection, carried in our hands; but after having inspected all the charms of the Gold Ornament-room, we discovered that the aforesaid catalogues describe only the contents of one glass case placed in the vestibule leading to the room in question; this glass case, containing a superficies of about 7 square feet, concealed electrotype copies of some select Greek coins. True, the Gold-room did contain a very intelligent *cicerone*, in the welcome form of a policeman, who was not only awake but most desirous of imparting the information that an ingrained system of monopoly compelled him to bottle up. Having the advantage, however, of remaining for a few minutes alone with this officer in blue, we learnt a great deal about the Gold-room,—a room, by-the-bye, containing a gallery, which seems to serve the purpose of a private lavatory for occult officials,—but we found that even he relapsed into a tomb-like silence when any one of the Museum attendants entered with a party of confiding sightseers, and at once destroyed any latent hope they may have entertained of understanding what they came to see. Nor was our experience of the mental capacity of some of the wand-bearers in different parts of the building encouraging. In one of the Egyptian saloons we learnt from an attendant that the numbers upon the antique objects were not intended to be read by the visitor,—that, in fact, they referred to a catalogue never visible to the unofficial eye. In the Elgin-room, anxious to follow a description which guides by the points of the compass, we did learn from an attendant, after proper hesitation, which was the north end of the apartment. The Mausoleum-room, though we know something about the trophies of Halicarnassus, was to us seriously one jumble of perplexities; the Hellenic-room, another, of incongruities. For an ordinary observer to attempt an archæological study in any of the ground-floor galleries of antiquities would be hopeless; to study architecture there would be impossible. One incident that afflicted us remains to be told. Having sought relief in the quiet of the King's Library, from a nightmare of zoological, palæontological, mineralogical, botanical, and archæological objects, some demon prompted us to ask a broad-browed and eminently

respectable functionary,—who might have been a dignitary of the Church, or a nobleman's confidential attendant, had he not vegetated in Great Russell-street,—whether the books before us were collected by George II., and presented to the nation by George III.? The functionary, in reply, repeated the words after us, and added a complaisant, "yes." We accidentally looked up over both the doors, and there, in Latin and English, was recorded a different story, which in the popular tongue ran thus:—"This library, collected by King George III., was given to the British nation by his most gracious Majesty George IV., in the third year of his reign, MDCCCXXIII."

THE PRESENT STATE OF THINGS.

As we have already said, the Act of last August alters nothing in the unreformed constitution of the Museum government, and nothing in its mode of management. It simply orders a transfer of the Natural History Collections from an old building in Great Russell-street to a new building at South Kensington; and fourteen years have elapsed since the first practical steps were taken to effect the transfer. The trustees who do not attend at Great Russell-street will not attend at South Kensington. Of the three Departments of Printed Books, MSS., and Natural History, described in the Act of George II., two will continue to be housed at the British Museum, the third will obtain fresh quarters at the Natural History Museum. But are there only three departments now as in 1759 for a Principal Librarian to rule? Of a certainty, instead of three there are thirteen departments, with thirteen keepers or under-librarians, and six assistant keepers; and obviously these thirteen departments comprise many other things than Books, MSS., and Natural History. Yet a "Principal Librarian" reigns over all, and, as far as the Act of last August goes, he will reign at South Kensington as well as at Bloomsbury. It is, however, not unlikely that the Natural History departments—of zoology, of geology and palæontology, of mineralogy, and of botany—will be removed from the control of the Principal Librarian; and also that the trustees will deliver over to the National Gallery most of the pictures in their possession, and to provincial galleries various duplicates of objects they are empowered to sell. Putting out of consideration, therefore, the Natural History Collections, which, as Mr. J. Winter Jones well said, ought not to be administered by a person appointed for his knowledge of books; putting aside printed books, MSS., charts, guide-books, &c., of which a librarian is master, the Principal Librarian is at the present hour sanctioning and controlling an expenditure annually of about 12,000*l.* for Greek, Roman, Oriental, and Mediæval antiquities, for Assyrian excavations, for coins and medals. Surely these are sections of his comprehensive charge about which he cannot be expected to know much, even had he time to study them. Furthermore, the Principal Librarian is saddled with the duties of secretary or expenditor. The whole of the 109,990*l.*,—the amount required according to the Civil Service Estimates in the year ending 31st March, 1878,—must have been first demanded, expended, and then audited by him. Very few questions about the money required for the British Museum are asked in the House; the trustees are so eminently respectable. Indeed, the Museum is not directly responsible to Parliament at all. "Sometimes," said a witness, "Mr. Walpole moves the estimates if he be in opposition, but if Mr. Lowe be in opposition he moves the estimates." The cost of the Museum was declared by the same witness to be three times as great as it ought to be, and he attributed the fact to "the system of trustees," and to "the system of appointment." That inestimable creature, a first-class butler, is not likely to practise more economy in the service of the nation than he did in that of an individual master. The soap and brooms at the British Museum cost 300*l.* a year; the washing of dusters and towels amounts to 200*l.* annually. A messenger draws 150*l.*, a wand-bearer 120*l.*, a time-keeper 130*l.*, a senior assistant 400*l.* per annum; while Dr. Birch, one of the greatest Egyptologists in the world, receives 600*l.* a year, with the expensive incumbrance of an unwieldy house. A learned scholar like Mr. Newton receives a similar salary; but five of the thirteen keepers get only 500*l.* a year each. The potentate who rules over all these, who spends in one year one hundred and nine thousand nine hundred and ninety pounds of the public money, receives for the joint offices of Principal Librarian and Secretary a salary of 1,200*l.* per annum.

A bad thing connected with the British Museum Act, 1878, is the almost indecent haste with which the Bill was concocted and passed. In so doing the Fourth Report of the Royal Commission on Scientific Instruction and the Advancement of Science, made in 1874, was contemptuously ignored. That Report quoted the views taken by scientific men, who regretted "that the national collections should be managed by a body of gentlemen whose time is, in most cases, fully occupied by other important duties, and the majority of whom are not selected with reference to any special qualifications for such a post." Moreover, the Royal Commissioners added these words,—"It is held to be singularly inappropriate that the three important personages who are the principal trustees, occupied as they are in the discharge of the highest functions of Church and State, should be burdened with the duty of making appointments to *offices of every grade in the British Museum.*" Before the Bill of 1878 became law there should have been a searching inquiry made on the lines of the Report of the Royal Commissioners of 1874, with the avowed purpose of deposing the Museum from its notorious celebrity as an Institution for the Secretion of Knowledge, and of starting it on a novel and noble career of widespread diffusion.

We have not a word to say against the British Museum as a vast store of learning. To those who know, to the learned man, the accomplished antiquary, the bookworm, the bookmaker, the scholar, it is a delightful retreat, where a lifetime may be profitably spent. But to the general public it is an enigma and a snare; they go there because it is a free institution, but they rarely buy a guide. The two Miss Pecksniffs were escorted there by Mr. Jonas Chuzzlewit because avowedly it cost him nothing. Children there acquire an early detestation of such places. How many Londoners know that the Rosetta stone, without which the history of untold centuries had perhaps remained in almost total darkness, is one of the links in the chain of historical research; or, knowing it, that the said stone is hidden in the British Museum? There is absolutely nothing to lead the stranger or the ignoramus to pause before the Rosetta stone; if he do pause, there is nothing to teach him its story or the subsequent effect of its discovery. The same remark applies to the greater number of objects in the entire National Collection. Before reform can be obtained it is necessary to admit that Museums are, first and foremost, for the instruction of the people; this done a properly-edited handy-book or numbered catalogue becomes an indispensable adjunct. In the Great Museum at Naples a page of the general catalogue is often posted up over the objects exhibited; thereby reference becomes easy. The whole thing is a matter of management, and the present system of management in Great Russell-street ought, if only for the sake of the managers, to be carefully inquired into at the convenient opportunity which the approaching transfer to South Kensington will afford. If the British Museum be to the public generally a huge curiosity-shop instead of a great instrument of popular education, it is because the administration and management are bad. Not a breath of suspicion exists; there is neither bribery nor corruption. It is only an old womanish system that stops the way of reform. Alas, to repeat the words of Sir Henry Cole:—"What can be done to move forty-five illustrious gentlemen who are unpaid?"

Kingscourt. — The new Roman Catholic Church of the Immaculate Conception, Kingscourt, has been consecrated. It replaces an old building, and has been erected from plans prepared by Mr. William Hague, architect, Dublin It is Gothic in style, and comprises nave, aisles and transepts, with apsidal chancel, and two side chapels. All the dressings are of limestone, contrasting with the wall, which is of sandstone. The windows throughout are mullioned with varied traceries in the heads. The pillars of the nave arcade are of polished granite, and the roof is of pitch pine, divided into panels for future decoration. There is a good deal of Irish marble work introduced. The flooring is formed of ornamental tiles, with encaustic tile passages. The dimensions of the whole building are—108 ft. in length by 45 ft. across the nave and aisles, and 70 ft. across the transepts.

THE SEQUEL OF THE OPENING OF WATERLOO BRIDGE.

We have to advise all those of our readers who take interest in the architectural improvement of London to watch with attention the results of the free opening of Waterloo Bridge, on which the public may be now congratulated. It is true that it may be said that the improvement thus effected is stratigraphical rather than architectural. But the reply is, that these two orders of consideration can never be disunited without evil results. Elevation must suffer if plan suffers. Elevation is, or ought to be, to a great extent dependent on position. Such has always been the case. It has usually been true with regard to the cities of Europe, as Horace tells us it is true with regard to the poet, *nascitur, non fit.* Our villages have grown into towns, our towns into cities. When adequate breadth has been, in the first instance, allowed for the main lines of communication, stately houses, in proportion to the means of the owners, and to the more or less splendid taste of the day, have gradually arisen. Where narrow lanes, bordered at first by small gardens which have ultimately been utilised by their owners as building ground, have given access to the remoter parts of a town, the architecture has adapted itself to these sunless alleys. The rows of Yarmouth may be familiar to some of our readers,—little long alleys, so narrow that a special kind of narrow cart has been constructed at Yarmouth for the express purpose of passing through them. At the other end of the scale, in the City of Palaces, Genoa, 'stately buildings crowd and jostle one another closely; divided, at times, by streets hardly wider than the rows of Yarmouth. Here we find that the architect reserves his decorative work for the fronts, and for the interior of the quadrangles; and that the flanks and rear of many a noble palace savour of the guard-house or of the prison. Open areas, wide streets, spacious squares, are essential elements of a stately metropolis. And no less essential is such an arrangement of thoroughfare, whether as regards plan or profile, as will allow of the unimpeded circulation of pedestrians, carriages, and sweeping and salubrious breezes.

Special interest attaches to the removal of the toll-bars from Waterloo Bridge from the information which the change will allow us to collect on the effect of this mode of checking the direction of street traffic. No bridge across the Thames is better situated for the facilitation of traffic than Waterloo Bridge. It crosses the river in the very centre of the great bend by which the existing channel changes its direction from its northward course from Vauxhall, to its eastward course, past the Tower, to the Docks. To the south, a straight line leads to a point where five great roads from the north, and as many from the south, of the river converge. From the centre of the bridge, for a distance of an eighth of a mile, there is a gentle fall of 1 in 650. Hence, according to the report of Sir J. W. Bazalgette, to York-road, for a distance of 287 yards, there is the rather severe inclination of 1 in 34½. From York-road, for a length of 379 yards, the road falls as 1 in 95 to Pear-street, near the New-cut. The total height of 38 ft. 6 in., which is thus gained for the headway of the bridge, measures the actual work done in approaching from the south. But the effect on a horse of the rise, if the gradient were of a uniform pitch of 1 in 68, would be only about half as much felt in the limitation of load as is that of the 379 yards at 1 in 34½. Up to the present time, to the dynamical obstacle to the use of the bridge has been added the economical obstacle of the toll. With the removal of the latter we shall be able pretty closely to estimate how much the service of the bridge has been interfered with by the physical, and how much by the pecuniary obstacle.

This gradient of 1 in 34·5, more elegantly expressed by Continental engineers under the form $\phi = 0{\cdot}029$, compares favourably with the limiting gradients of all the other Thames bridges, with the exception of Westminster. Thus while it must limit the load to be drawn over Waterloo Bridge, it will not have any effect in the way of diverting the traffic over any other route. For the crossing of Westminster Bridge the most severe gradient is one of 0·026, for 60 yards from Delahay-street to King-street. On the south side of Blackfriars Bridge occur 220 yards rising at 0·038. On the south side of Southwark Bridge, there is a rise for 66 yards of 0·036; but on the north there is the

more formidable pitch, for an equal distance, of 0·045. London Bridge itself has 69 yards of its south approach graded at 0·037. Thus as far as the question of the limit of load by the steepness of the maximum incline is concerned, Waterloo Bridge may now compete with any other line that crosses the Thames, with the sole exception of Westminster, where the line of approach, it must be remembered, runs almost at right angles to that which crosses the Strand.

It is only just to a name that stands deservedly high,—if not as yet so high as it deserves,—in the annals of English engineering, to call attention to these facts. Judged by the two rules of plan and of profile, or section, of approach, the design of Waterloo Bridge affords an honourable testimony to the skill and wisdom of Rennie. The one point in which the structure is now exposed to criticism, that of the permanent durability of its foundations, is one as to which we do not think that any aspersion can be fairly thrown upon the engineer. The man who is entrusted with the expenditure of large sums of money, whether for the public or for private clients, has no right to buy his own immortality by a lavish outlay of that money. To provide for the visible future is his first duty. But when the question is not that of the visible or immediate, but that of the distant or contingent future, the case is different. It is like a question of insurance. There are natural limits to this kind of foresight. We can now wish that the foundations of Waterloo Bridge had been laid 10 ft. lower than is actually the case. It is more than probable that our children will have reason to wish that the level of the basement of the Palace at Westminster had been laid 10 ft. higher than is actually the case. But what would have been said sixty or even forty years ago, if Rennie or if Barry had proposed such enormous additions to the estimates they prepared, as would have been involved by the extra work? Had they said, "There is reason to anticipate that the tidal action of the Thames will increase, year after year, and that by 1880 we must provide for at least 6 ft. more vertical range than at present," what would have been the reply? "It will be time enough," it would have been said, "to provide against the change when it has been shown to be in actual operation. To make the addition to the present estimates which would be required for such a distinct anticipation would be to spend an additional sum of money sufficient, if laid out at compound interest, to rebuild the bridge, when the necessity should arise from the gradual deepening of the river."

Regarding Waterloo Bridge as thus centrally situated, and horizontally disposed, with reference to the South Bank of the Thames, let us now look at its probable future with regard to the northern lines of communication. There, it will be at once seen, there is room for great improvement. More than that, there is encouragement to effect such improvement.

From Waterloo Bridge to the Strand, a distance of 386 ft., the line of approach is approximately level. From that point we have to suggest the formation of a new street, running almost directly north, and pointing to the Great Northern Railway Station at King's Cross; the line being so drawn on the detailed survey of London as to avoid interference with Drury Lane Theatre, to which it would open a most direct and convenient access. This line would intersect Holborn close to the end of Queen-street. It would open up a close and poor neighbourhood, and, form a natural line of street, of the utmost value as a thoroughfare. While demanding a large capital for temporary use, the ultimate cost of this line of street would not be excessive, owing to the great improvement that it would effect in the district, and to the great value of the new frontages. The distance is almost exactly 1,000 yards. The ascent may be taken at 0·025, or 1 in 40 for about 400 yards. This compares very favourably with the gradients of 0·031 for 387 yards (taking the mean rise) of St. James's-street, of 0·029 for 390 yards in Regent-street, and of 0·027 for 353 yards up the Haymarket. In the first of these lines, moreover, there is a maximum portion of 0·043, in the second, one of 0·039, and in the third, one also of 0·029. Over the new line from the Strand to Holborn the mean gradient of 0·025 might be made continuous, so that in the facilities offered to the horses, no less than in the direct saving of distance, this new road would offer a great boon to the traffic of London.

The new centre of traffic that would be thus formed would depend for its exact location on the two conditions of a straight line being maintained from the point where the centre line of Waterloo Bridge strikes the Strand, and of the clearance to be left in passing Drury-lane Theatre. We do not profess to fix the spot to a few yards, but it will evidently be not far from the intersection of King-street with Holborn. At this point, or at the intersection of the street leading along the north side of Red Lion-square, we propose to pause. From the spot thus determined a straight and open line of street leads to the Euston Station. The increase of traffic for which it would be necessary to provide would no doubt be best accommodated by a police regulation to the effect that carriages from Holborn to Euston should take the line of King-street, Southampton-row, Woburn-place, and Tavistock-street, while carriages proceeding from Euston to Holborn should take the line of Bedford-place, or that of Montague-street. By this plan a complete and unexceptionable line of communication from the Waterloo Station on the south, to the Euston Station on the north, would be established. The demolition necessary would be reduced to a minimum, covering only a length of some 1,000 yards. The general convenience of the north and south traffic would be consulted, and that in a degree which it would be impossible to improve. The main point to be cared for would be the arrangement of the crossing of the two lines of traffic at the Strand and at Holborn. The levels do not readily lend themselves to the project of providing crossings by bridges. Loop lines, and diversions of the up and down traffic, so as rather to darn in with the course of crossing vehicles than directly to run athwart it, is an arrangement long since pointed out in the *Builder* as one that would by-and-by become absolutely necessary whenever two main lines of Metropolitan traffic crossed on a level; and the arrangement of this nature, as in the case of the line from Blackfriars Bridge a little to the east, would be the only point in the new route demanding unusual care on the part of the surveyor.

We propose, in the first instance, to stop at Holborn, from economical reasons. It would be desirable to see how far the estimate that the construction of a thoroughly good line of street, according to the conditions of plan and section which we have shown to be so unusually favourable, would recoup the authorities for the purchase and demolition of the low-class property to be pierced, would be verified, before proceeding with the remainder of the line to the Great Northern and Midland stations. It is even possible that the latter companies would contribute towards the formation of a line of approach which should rival that on which Robert Stephenson had his eye when he selected Drummond-street as the terminus for the London and Birmingham Railway. It is well, in passing, to bear a tribute to the foresight, in this respect, of that great engineer. When the London and Birmingham Railway Company went to Parliament, in 1835, for an extension of their line from Camden-town, the question of expense was regarded with much more anxiety than has, unfortunately, since been the case. It was, however, then under contemplation that the Great Western Railway would join with the Birmingham Railway at Wormwood Scrubs, and run into a joint terminus. With that view land was happily taken, and works constructed, for four lines of rails; an extravagance which has proved to be a great economy in the long run. With the prospect of thus halving his outlay, Mr. Stephenson had two main objects in view. One was to select a position for a permanent terminus at a spot from which straight and unimpeded lines of street should allow the cab and carriage traffic most freely to radiate from the station; the other was, of course, to approach as near to the heart of London as could be done without demolition of house property to any great extent. This latter condition was, in 1834 and 1835, regarded as much more important than it is at present; not only because directors were afraid of the vast expenditure with which they have since become familiar, but also because Parliamentary opposition, on the part of owners and occupiers, was then much more formidable than is now the case. The enormous aggregation of the capital of the great railway companies has invested them with a power to go where they think fit, of which no one dreamed as possible forty-four years ago.

These conditions were so unusually fulfilled by the position of Drummond-street, that the choice of Mr. Stephenson was naturally determined by them, with hardly any room for hesitation. It so happened that fields, market gardens, and the territory of a great milk-yard, occupied almost the entire length of the Euston extension; and that one or two houses only had to be pulled down, at the crossings of Park-street and of the Hampstead-road. Mr. Stephenson, indeed, has been heard to say:—"What a magnificent site Euston-square would be for our station, if we could hope to buy it;" but this matter was never, so far as we are aware, seriously on the *tapis*. Drummond-street formed, in 1834, the boundary of building in this part of London; and at Drummond-street, therefore, the terminus was fixed. So much did the considerations of respect for the metropolitan roads, and the actual state of building property in London, take precedence of those of the formation of the best engineering line, that two inclined planes, of the then unusual severity of one in seventy-five and one in sixty-six, were adopted in order to minimise the interference of the crossing of Park-street and of the Hampstead-road by the new line with the roadway levels. And this involved the use of a rope, worked by an engine at Camden Town, for the haulage of the trains from Euston Station, in the condition of the locomotive in 1834-1836.

The question of the best position for a central metropolitan station is one which has never been thoroughly faced by any one of our great engineers. The Great Western Station was at first only intended to be temporary; and Mr. Brunel contemplated other lines into London, when the difference that arose as to gauge led to the breaking-off the negotiations for the joint Euston Station. The London and Southampton Railway halted for a long time at Vauxhall before it pushed on, through a comparatively poor district, to its not very central station at Waterloo. The King's-cross and St. Pancras stations were of much later date, and in a position that can only be regarded as a *pis aller*. The Great Eastern station was as much out of the running, in position, as was every other feature of that wretchedly mismanaged line, which fell into bad hands from the beginning. The position of the Brighton and South-Eastern stations might have been much better adapted for the ultimate convenience of the public if it had been always considered that the Thames must, sooner or later, be bridged for railway service.

As to whether at any future time a central station for London will be constructed at the joint cost of the nine great radiating railways we do not, at the present time, wish to express any opinion. So much has been done in the bit-by-bit, hand-to-mouth system of extensions, and junctions, and makeshifts, that less imperative call for such a station now exists than at one time appeared to be urgent. But our present business is not with the work of the railway engineers, but with that of the surveyors of the metropolis. The great stations being where they are, it is the duty of the latter to provide for such direct and ready access being given to them as may at once serve the needs of the travelling public, and so adapt themselves to the stratigraphy of London as to adorn and improve the metropolis however the railway companies may now or hereafter endeavour to convey the local traffic over their own lines, and to interlink their termini one with another.

With these views, we not only venture to point out the new link in the Waterloo and Euston line of street as one that is extremely desirable, but to hint that, sooner or later, it will appear to be absolutely essential. And we confess that we think it of no small importance to the architectural beauty of London that such a work should be thoroughly done—done as a whole, and done as a noble straight line of street, and not unsatisfactorily cobbled up by pulling down an alley here, cutting off a corner there, taking down half of a street in another place, and thus making the needed line resemble that taken by a darning needle through a stocking, instead of that taken by an arrow through the air.

For the continuation of this line from Holborn to King's-cross much the same arguments as those already used will apply, although in a less urgent degree. All that we at present recommend as a *sine quâ non* is, that the southern point of the line be so laid out as to allow of its prolongation at a future time without impediment. As to this, as Drury-lane Theatre is a determining point in the southern portion of the line, so is the Foundling Hospital in the northern. We have to avoid the destruction or the injury of these two important buildings.

Judging from the maps at hand, there is no difficulty in carrying out this object, so only that it be kept in view from the first. Were there a question as to the relative importance of a line of direct southern access to the London and North-Western and to the Midland and Great Northern lines, the matter might be more complicated than we think it really is. The piercing of a new street, however desirable it may be in a traffic or in a sanitary point of view, is a serious matter. It involves great outlay; and, even if that be fully justified, it involves a degree of interference with the convenience of the householders and tenants which should never be rashly undertaken. Were the question simply that of the true line to the three northern stations, it would be one of more immediate magnitude, as well as of more difficulty, than that which we have ventured to raise. As it is, the fact that the foresight of Mr. Stephenson has provided a mile of straight and open street, out of the 2,800 yards that separate Euston Station from the Strand, will now have its proper weight. The Gray's-inn line is that which naturally serves for the southward traffic of the Great Northern and the Midland Stations. Those who are interested in attracting traffic to those lines, instead of to the London and North-Western, may lament that such is the case, or may direct their energies to an improvement of that line. Sooner or later, no doubt, such an improvement will be effected. But it will be costly. Nor can it be expected that it will be self-supporting or remunerative at all in the degree that such advantages may be predicated for the new Holborn and Strand line of connexion. The case is one in which, long after his death, the patient study given by a professional man to the main interests of his clients, bears rich and permanent fruit. It has needed the removal of that petty, irritating, strangling charge which has hitherto reduced the great work of Rennie to the rank of a noble monument, rather than that of a chief convenience of the metropolis, to bring out in its full light the fitness of the point selected for the terminus of his line by the clear intelligence of Robert Stephenson.

It was stated at the meeting of the Metropolitan Board of Works on the 4th instant, that the cost of purchasing Waterloo Bridge had been 475,000*l.*, and that of the foot-bridge at Charing-cross the immensely disproportionate figure of 98,540*l.* The original cost of the former bridge was 565,000*l.*; that of the approaches, besides the land and buildings, 112,000*l.* Land, buildings, and contingences amounted to 373,000*l.*, making a total of 1,050,000*l.* The bridge was opened with great ceremony by the Prince Regent on the 15th of June, 1817.

SUGGESTIONS FOR THE INSTITUTE.

Every one who thinks, as we do, that it is to the advantage of the architectural profession that they should be as closely as possible related to a central representative body, and that the Institute should become *de facto* the representative of the profession throughout the country, will attach some importance to the suggestion we have to make in regard to giving increased facilities to members not residing in London to take their part in the concerns and business of the Institute. We use advisedly the roundabout phrase "members not residing in London," because the recognition of any distinction between "town" and "country" members has been abolished in the late alteration of the bye-laws, and within five minutes of the passing of the said bye-law we remember that a non-resident member took exception to the expression, pointing out to the president on the occasion that he had no right to refer to him (the speaker) as a "country member." Let the susceptibilities of non-resident members, therefore, be duly considered, and obnoxious distinctions no longer remembered now that they are officially done away with, and that demands on the pockets of all members of the Institute, whether residing in London, Cyprus, or Timbuctoo, are equalised, and their *locus standi*, therefore, rendered in every respect theoretically alike.

But then it is, in one sense, theoretically only. With the best and most liberal intentions, the Council of the Institute cannot (in the present state of architectural science) abolish distance. Even if they could do as some specially virtuous railway companies do when their annual meeting comes round, issue free passes by rail to all shareholders in the concern, they could not at the same time provide that a member busily at work in a distant county should have time to come up and vote on some question of professional practice, or of Institute politics, which may seem to him of considerable consequence. And as non-resident members have all been raised to the privilege of paying the same as resident members,—and wisely so, we think, as it removed some difficult questions of precedence and put all members on the same footing in regard to their interest and influence in the Institute affairs,—every effort should be made to give them all the same facility in taking part in its management. And on this ground we recommend strongly the adoption of a suggestion which we believe has been unofficially mentioned, that of allowing members residing more than a certain distance from London to vote by letter on any question of which previous notice has been given. The limit of distance should be such as renders it impossible to come into town to a meeting and go back the same night.

A little arrangement and discussion of details would be necessary, no doubt, to get it to work all right and in a manner satisfactory to all parties; but we cannot imagine that there could be any difficulty worth speaking of in making the arrangement, and we must regard it as highly important, if the Institute is really to take its proper place as the organising and representative body of the whole of the profession in England, that all professional members should have the facility of voting on questions in which they may feel interested, without the expense of time and cash incurred in a journey to Town for the purpose. Unless such an arrangement is made, we feel strongly that there never will be that real equality between resident and non-resident members which the alteration of the bye-laws contemplated; and the members living in the country will naturally feel that while they are paying as much for membership as the London men, the latter will, from being always on the spot, have really a most disproportionate power of managing things their own way, if they have any temptation to exercise it. One or two country members we know resigned on their subscription being raised (it was only one or two, we believe, or perhaps only one), which we hold to have been a decided mistake; for the alteration, along with all the others that have been made, was made entirely in what were believed to be the interests of the profession at large as represented in the ranks of the Institute; but it is certainly desirable to remove every feature in the working of the Conduit-street meetings which can leave the impression that some among the members would necessarily have an advantage over the others in influencing the conduct and decisions of the meetings.

Another point which we consider of great consequence to the continued, or rather to the increased, success of the ordinary meetings (for we suppose no one would be satisfied with a mere *continuance* of the rather insufficient and languid attendance which has been the usual average at the meetings), is the repeal of the very ill-advised regulation which places the paper for the evening at the close of the proceedings, and relegates the discussion till the next meeting. On this point we have before spoken strongly, and we have some reason to think that the authorities are beginning to see the matter in the same light: certainly the exodus of half the audience on one or two occasions before the paper was read ought to have opened their eyes to the natural consequence of the arrangement. We say the natural consequence, because it is almost inevitable in such a case that one portion of those who attend come to hear or join in the discussion on the old paper, and another portion to hear the new one read. There are so many different kinds of subjects to be treated in relation to architecture, that it is inevitable that some should interest one class of members more than another: consequently, under the new system there must always be a double element in the audience, to each of which only half the evening's proceedings is of particular interest. The result naturally is that some drop in in time to hear the paper, and that others who have heard the discussion, and are not interested in the subject of the paper, are disposed to leave without hearing it, and hence that indecorous stampede, not very consoling to the reader of the paper, which has been seen to take place in the middle of the evening, in spite of rather pathetic remonstrances from the chair. The thing is utterly illogical. Mr. Chasuble has promised, we will say, a paper on the decorations of St. Minimus the Martyr, and he finds the room full of gentlemen more or less known to fame in connexion with their theories or experience in the trapping of water-closets. They do not, as he too well knows, care a brass farthing for St. Minimus; they are all intent on refuting the erroneous and dangerous views propounded at the last meeting by Mr. Syphon, in his paper on house-drainage. A dozen people, all with equally strong belief in so many different systems of trapping, carry on the contest over the dead body of Mr. Syphon's paper with increasing interest; always when time is called a new speaker has something which he *must* say; and then Mr. Syphon has the right of reply, and after he is warned that it is really time to close, he pathetically begs for just ten minutes more in which to demolish his adversaries; which ten, of course, expand to twenty. Finally the votaries of sewage drain off in a body, and Mr. Chasuble, feeling very decidedly "trapped," presides over the apotheosis of St. Minimus before a greatly diminished and yawning audience. And that is exactly what is sure to happen in five cases out of six. Whereas when the paper of the evening takes the principal place in the programme (as it does at all other meetings of the kind that we ever heard of), and is discussed *tout de suite*, the meeting is composed of the people who are all interested in that subject, and are prepared to give proper attention to it. As to the idea of giving increased value to the discussion by postponing it for a fortnight, we have not yet heard or seen a report of a single discussion which included anything that might not have been said without any elaborate preparation; nor do we believe any one gives the subject special study during the intervening fortnight. People are much more likely to discuss a subject with interest and vivacity when it is just fresh in their minds; and the opportunity of looking up the subject specially would be fully provided for by giving, in the circular announcing the paper, a brief statement of the points to be touched upon, and the line which the lecturer means to take. This has been already done in some cases, but with a little assistance from the intending reader of the paper it might be done rather more fully, and then every necessary aid would be given to promoting a useful and practical discussion.

There is one other point we may touch upon, one in regard to which a great many remarks of discontent have reached us, viz., the habitual monopoly of the discussions by a few members, who seem expected always to speak, and who always dutifully fulfil the expectation; some of whom are almost habitually called upon from the chair. The result of this is, of course, that others who may really have more to say do not speak from a feeling that they are not wanted, and will appear to be interlopers. The younger members think they do not receive much encouragement to take part in the proceedings, and the consequence is that things in general get into a groove, which is on many grounds undesirable.

QUEENSFERRY AND INCHGARVIE.

On Monday, September 30th, 1878, Mrs. Bouch, wife of the well-known engineer, in the presence of a small company of ladies and gentlemen who had braved a rain-charged north-easter and a rough sea, laid on the rocky islet of Inchgarvie the foundation-stone of a bridge, which it has been stated will no doubt in due time assert itself as the greatest engineering enterprise of the day. By means of this bridge the passage across the Firth of Forth, that is, between North Queensferry and South Queensferry, will be accomplished in a couple of minutes.

Of the tens of thousands of summer pilgrims who wend their way "over the Border" to the glens and mountains of the North, only a few know anything concerning the islet of Inchgarvie, which is almost midway between the two Ferries. The reason of this ignorance is that the route is far from agreeable. The drive from Edinburgh to the Southferry is, weather being favourable, most delightful, but on arriving there the horrors of the middle passage have to be encountered on board of a little tubby steamboat, or a pinnace that is greatly given to shipping as much water as possible.

This ferry, so much fallen into disuse, "has seen better days." Previously to the Reformation, the ferry and all the fees connected with it belonged, by right of office, to the Abbot of Dunfermline; but when mutterings of a coming change, political and religious, were heard throughout the land, the Abbot prudently disposed of his rights to a joint-stock company,—perhaps the first transaction in shareholding business known in Scotland. The Abbot was anxious to raise money, and at the same time was fearful lest he might be deprived of his property, so he precipitately ordered an agent to dispose of the ferry to one or more persons, according as he should be able to raise money to satisfy his employer. The amount of money asked or obtained is not stated. According to the late Robert Chambers, the agent divided the ferry into sixteen shares. The project was immediately successful. The agent continued to sell as he found persons willing to buy; and, scandalous to relate, there is evidence still in existence that he actually sold eighteen sixteenth shares of the Queensferry passage. Three centuries pass away. "It was early on a fine summer's day, near the end of the eighteenth century, when a young man of genteel appearance, journeying towards the north-east of Scotland, provided himself with a ticket in one of those public carriages which travel between Edinburgh and the Queensferry, at which place, as the name implies, there is a passage-boat for crossing the Frith of Forth. The coach was calculated to carry six regular passengers, besides such interlopers as the coachman could pick up by the way." All readers of "The Antiquary" will recognise the above quotation, and will recall the indignation of Monkbarns at the non-appearance of the vehicle at the starting time and place. "Woman," said he (addressing the old dame who dispensed the tickets), "is that advertisement thine?" showing a bit of crumpled printed paper. "Does it not set forth that, God willing, as you hypocritically express it, the Hawes Fly, or Queensferry Diligence, would set forth to-day at twelve o'clock? . . . . Is this base annunciation a mere swindle on the incautious, to beguile them of their time, their patience, and three shillings sterling money of this realm?" The strife of tongues comes to an end, by a query on the part of the antiquary, whence we learn the ferry charges. "Will it hire, I say, a pinnace, for which alone the regular price is five shillings?" As a matter of course, the diligence reaches the Ferry too late to permit of crossing till the following day, and the travellers make themselves comfortable at the Hawes Inn, facing the South Ferry pier. At this very inn, on September 30th, 1878, did the ladies and gentlemen who in storm and rain had inaugurated a great engineering work, sit down and bravely dine.

A little bit of Dryasdustism will, perhaps, be allowable. The royal burgh and sea-passage of Queensferry, within nine miles from Edinburgh, derived their name from Margaret, the Saxon princess, afterwards consort to Malcolm Canmore, the Scottish king, having been driven ashore in the neighbourhood by a storm in her flight from England immediately after the Norman Conquest. Tradition points out a small bay to the west of the north ferry, and which is named St. Margaret's Hope, as the spot in which her little fleet found refuge. Even to this day the memory of good Queen Margaret blossoms sweetly along the southern shore of Fife. After her death she was interred before the altar of the Holy Cross in 1093. The student of English history is, perchance, better acquainted with the sainted queen's daughter, "Good Queen Maude," wife of Henry I. of England.

Inchgarvie is the rocky islet on which will rise the central pier of the two great spans of the bridge. As far back as 1818 it was proposed to throw a wire bridge of two arches across the narrow strait at this point, the central pier to be established on Inchgarvie. Shortly after the Restoration the Bass rock was purchased by Government and converted into a State prison,—previously to which purchase the principal establishment of that nature in Scotland was placed upon Inchgarvie. Among many other prisoners of distinction who had been confined in it was Lord Home, who signalised himself at Flodden Field,—

> "Of gallant Gordons many a one,
> And many a stubborn Highland man,
> And many a rugged Border clan
> With Huntley and with Home,"

and fell a prey three years afterwards to the implacable hate of the Regent Albany. When Charles II. sojourned in Scotland, in 1651, he visited Inchgarvie, and in connexion with this visit it may be mentioned that a mile distant from the islet are the ruins of Rossyth Castle, on a rocky promontory a little to the west of North Queensferry, which was once the seat of that branch of the family of the Stuart from which Oliver Cromwell was descended. There is a tradition that as Cromwell's grandmother was a daughter of the Laird Rossyth, and, furthermore, was born in the castle, the Protector visited it when encamped in the neighbourhood.

DISFIGURED STREETS AND BUILDINGS.

It must often have struck many thoughtful explorers into the mysteries of art and architecture at how small a cost, comparatively, our London street-ways and thoroughfares could be improved and made to exhibit far more of art-feeling than they now for the most part do. And this might be done, not only, or even so much, by additions, as by subtractions and leavings out. How many things might be *added* may be sufficiently indicated by the accounts which every tourist, especially at this time of the year, brings back with him of what he has seen in Continental cities, and how much he misses in returning to even so huge and wealthy a city as London! We hardly dare to specify any one desideratum, or to point to one thing more than to another that is missed if we but look out for it. Take the "silent highway" for example,—not quite so silent, by the way, as it used to be, for the evidences of the presence and power and noise of steam are now never for a moment absent. Seek on its shores for the gardens and palaces which you might expect to find in long and imposing rows. Here and there a striking show, a house somewhat larger than usual, or a palace in an unexpected spot, but a continuous and systematically-built row or line of houses, or palaces, or public buildings, nowhere exists. The spirit of trade has built up the tall loopholed warehouse where the palace ought to have stood!

Now this all but total absence of what we might naturally look for in so conspicuous and notable a line of way is not a little remarkable; and we might then fancy, it being absent, that a something of the kind would be found elsewhere, and may be in some other, perhaps, even more accessible locality; if so, where is it? London can boast of no long-drawn-out line of stone or marble palaces, churches, and public buildings. All such lie scattered about and away from each other, and without any sort of connecting links. We have often thought, in a dreamy way, of some such line or street of palatial structures in London city, if only made up of what already exists, and of the novelty of it. A striking display, architecturally looked at, it would make a point to aim at and a place to go to see. It seems now a pity indeed that Wren had no such chance; all his buildings lie scattered about. Inigo Jones would seem to have made an attempt at it, but no more. It is a problem yet for the future, like so much else in architecture. We allude here not to the long rows of evenly-built blocks of houses, all of the same pattern, with but street separations between the blocks, but to separately-designed and built houses or palaces, with spaces next each one of them, each house or palace being quite distinct in character and occupation. Pall Mall, even as it is, is perhaps the nearest approach to this that exists at present, but what there is of it is but on one side of the way.

But it is not so much to lament over what is absent in huge London that we here intend to speak, but to say a word or two on some items that are ever and always present, and, we are sorry to be obliged to say, on the perpetual increase. One of them, and perhaps the chief one, is the presence everywhere, and on all sides, right and left, of staring bills and advertising placards, covering at times the whole front of a building, the passages in it, and all but the very windows themselves, blotting out the very daylight itself. These, as all know, are everywhere, and none need be told what they are about, or of the sameness of the perpetual repetitions. Nay, so fast is the present growth of this mode of communicating information, that there are some buildings,—and public ones, too,—that seem all but doomed to extinction, as far as their architecture is concerned, by the pasting over them of this voluminous printed matter. We might mention, by way of conspicuous example, the inner courtyard of no less a building than the Royal Exchange, where the whole of the lower half of it, to the first-floor windows, is devoted to this purpose, and huge white and coloured "posters" all but cover the architecture, and deprive the upper story of all but a mere printed paper support! Surely a something better might be devised, and a more artistic and less damaging mode of bill-posting be resorted to. The railway time-bills excepted, it is difficult to see what these have to do with the purpose of the building; for we cannot, nor will not, suppose for a moment that the few paltry shillings that these unsightly placards produce weekly can be of moment to the citizens of the largest and wealthiest city in the whole world. If any curious reader should doubt, let him but stand for a few moments under the painted arcade of the Exchange, and look for the supports of the upper stonework, not yet paper covered, and he will see how much is lost to architecture by this poor way of doing things. The Royal Exchange, be it noted, has quite a history, and is a typical public building, and is surely worth a little artistic looking to, if worth any care at all.

We have thus cited more particularly the Royal Exchange, because so conspicuous, and seen by all the world, but not because it is the only instance of the kind; far from it, for it is hardly possible to enter a public building wherein these posters,—many feet high, sometimes,—and railway time-tables, do not all but hide the lower portion of the building, and creep up the staircases. No architecture, however carefully worked out in detail, or elaborate in "ornament," can stand against this paper and huge printing display, and it is a pity that a something else and better, and less obtrusive, cannot be devised to obviate the necessity of it, if, indeed, it be necessary. No element in architecture is so needed as a sense in it of repose, and it need hardly be said what the effect of such additions to it must needs be.

Mighty London, without its miles upon miles of "posters," would hardly be known or know itself. There may be, indeed, no help for this; but that its art and *architecture* suffer, and suffer a good deal, from it, there can be no doubt for a moment. Indeed,—and the subject might be pursued into details,—there is nothing which seems more to *put out* art in an object, whatever it be, than huge, loud, and awkward printing, and displayed lettering and figures. Any popular collection will evidence this, and we could point to many objects where the eye is sadly distracted by the efforts made to convey information in huge unsightly lettering, and on labels at times fully as big as the objects they profess to tell the date and the style and the ownership of. In antique days, when things were so different to what they now are, this lettering and writing was quite an art, and a fine art in itself; and even in remote and out-of-the-way places, as told us by Sir Charles Fellowes, no small skill and artistic power was displayed in the inscriptions to be found everywhere, and incised in the stone or marble,—an all but lost art, yet one that it would be comparatively easy to revive. It would certainly be a new thing in architecture now-a-days, in whatever style the architecture might happen to be, to see the plain wall surfaces of it covered with incised inscriptions as *artistically* thought out and executed as those yet to be found in old Assyria, Egypt, or Greece!

There is yet another item in the "progress" of London improvements which it is strange has not excited a little at least of architectural anger. We allude to the ever-increasing number and size of the visible telegraphic wires which run from house to house, from building to building, and from street to street, all over London. Indeed, so many and conspicuous are these, and so fast are they being added to, that we seem in some places to be covered by a huge wire network. This, too, may be an imaginary evil, but it is a pity that some other mode of electric wire communication cannot be readily devised, as it certainly would be did but the art leanings and feelings of the public mind demand it. The church steeples and church towers have been, as might have been anticipated, eagerly seized on as convenient and strongly-built posts to hold the wires, together with a whole apparatus of holdfasts and ties of different kinds, and none need to be told, who have noticed them, how much they disfigure the structures to which they are fastened,—a dozen in a row sometimes. A necessity, as we have said, this may be, but it serves to show how art and architecture must need give way when the spirit of the age, and

the all-dominating spirit of trade and business, demand a new arrangement of things.

We have thus ventured to name one or two eyesores the omission of which might go to help to improve our town arrangements and architecture. To many, perchance, they may appear at first glance trivial; but they are not so. They take up more of daily attention than many might think, and, without doubt, do much to put the art, and certainly the *architecture*, of London out of countenance. An ideal street of London houses, public buildings, churches, and other buildings which the future may have in store, of the very best of materials and of the very best and most careful workmanship, and full of the best of decorative and sculptured details, would be all but lost and put out of sight by the posters and printed bills and time-tables, *et hoc genus omne*, and the very finest of outlines, by the most careful of designers, marred by being tied up by a network of copper wires, however useful their purpose. So much is said on all sides, and being done, too, for the education of the public in matters artistic, and to cultivate what is termed the "eye" to the beauty of form, proportion, colour, harmony of arrangement, and so on, that it would seem a little strange that such incongruities and unsightly additions should be borne with as they are. But it is never too late to mend; so that we would hope in the future to see a something better, not only here, but in many other little matters of detail, which sadly perplex very many who are striving for an art influence in all common things about us.

EDINBURGH.

All Saints Church, Brougham-street, may be considered the St. Alban's of Edinburgh. It is, we believe, the only church in the city in which Mr. Mackonochie has officiated, and ritualism is here carried to its fullest stretch. In connexion with the church, and having a frontage to Glen-street, there is a group of buildings, including a mission-house, schools, home for the aged, and a hall capable of accommodating about 600 persons. The group has now been augmented by the addition of a parsonage which is in course of being roofed in. It occupies a site facing Brougham-street to the north-west of the church, with which it communicates by the narthex. It has been designed by Mr. Robert Anderson, architect, and groups effectively with the church. The west elevation consists of a gable of three stories and an attic; the windows on each flat are lintelled, and of two lights, but the attic window in the gable is pointed, and has a label moulding and shafts with caps on the ingoings; this window opens upon a stone balcony, having an open parapet, which is supported on moulded corbels. On the second floor of the south elevation there is a corbelled oriel, roofed in with stone, and the attic is lighted by a double dormer.

A large addition has been made to the Corn Exchange. The original building presents to the street an Italian façade of three stories, with a clock-tower at its western extremity. It has more the appearance of a club-house than what it is intended for; it is quite out of keeping with the surroundings, and the exterior elevation bears no relation to the interior arrangement. Mr. Moreham, the city superintendent, in designing the addition, has departed entirely from the style of the original, and has designed a façade showing two gables and dormer windows, which is, no doubt, in accordance with the traditions of the locality. The composition is graceful and picturesque, but, pleasing though it be, we are of opinion that if Mr. Moreham had adopted a style having some affinity to the original structure, and which, although differing from it in degree, would have formed a connecting link with the surroundings, the result would have been more satisfactory. The new gables slightly overtop the horizontal cornice of the old portion, and the tower which stands between has now a dwarfed appearance; to remedy this it is proposed to add another stage to the tower.

On a site between Canongate and Cranston-street a new institute is in course of erection from the designs of Messrs. R. Paterson & Sons. The building is to measure 108 ft. by 48 ft., and is to have entrances from Canongate and Cranston-street. It is designed in the Scottish style, and the elevation towards Cranston-street consists of a crow-stepped gable, having in the centre a large three-light window, which is flanked by two-light windows, having pediments supported on trusses and ornamented with carved shields and terminals. The first floor is to contain a hall seated for 200 persons, a room for social gatherings, 40 ft. by 23 ft., and three class-rooms, each 23 ft. by 13 ft., all of which communicate with a spacious corridor. On the ground-floor is situated the janitor's house, heating apparatus, &c., a class-room, 63 ft. by 23 ft., which can be divided into two portions by means of a movable partition, and another apartment, 23 ft. by 15 ft. 9 in., to be appropriated as a session-room for an adjoining church. The estimated cost is about 4,000*l.*, and it is expected that the Institute will be set in operation early next summer. The promoters of the Institute intend to make a small charge for the use of the rooms, but in the event of the scheme proving a success it is proposed to hand over the building as a gift to the people of the district.

The central spire of the cathedral is now built up to the corbel-table from which the spire is to spring, and the choir is roofed in. The decoration of the exterior is approaching completion. The granite shafts of the west doorway are inserted, and the carving of the tympanum has been completed. It represents a sitting figure with a key (presumably St. Peter), under which is a row of demi-angels holding scrolls. The oak doors are hung and being decorated with elaborate wrought-iron work. The statues in niches under the figure of Our Lord, at the east end, are now in their places, and five statues occupy the niches over the great rose-window in the south transept. The glazing generally is of plain tinted glass, but stained glass has been inserted in the south clearstory of the nave. This stained glass does not appear to us to be worthy of the structure in which it appears, being of a commonplace character, suitable enough for an ordinary parish church, but not for where it is. The paving of the nave, composed of polished flagstones, relieved with squares of a red colour, is in progress. The state of the work holds out a hope that the nave may be fit for occupation in the course of next month.

The new premises of the Union Bank, in George-street, are now occupied by the officials. The building will not compete in grandeur with some of the other banks in the city, but it possesses a quiet, sensible, business-like appearance, and is a notable addition to the architecture of the street, distinguishable from the surrounding buildings by its massive simplicity. Another addition to the adornment of this street is the Chalmers statue, placed at the intersection of Castle-street. The eminent divine is represented of heroic proportions, robed as Moderator of the Church, and holding a large open Bible. The pedestal, which is of red polished granite, has been much criticised; it is in the form of a truncated obelisk, having a wide spreading base. The statue, as seen from some points of view, does not seem to have sufficient standing-room. Being the third of a series, it would have been better had the same kind of pedestal been used as in the other two, for this is an instance where repetition would have been advantageous to the general effect.

The improvement of Princes-street is being pushed on with vigour, the heavy traffic being diverted to allow of greater freedom to the workmen. The widening of the street, which was called for by the laying down of tramways, promises to be eminently successful. The chief difficulty in the carrying out of the scheme is the position of the Royal Institution, and it was proposed to curtail the steps leading to the portico, so as to admit of the rails being laid in a straight line from end to end of the street, but this has been opposed by those in authority, and the line will form a bend in passing the Institution. Everything connected with the work is being done in the most durable material, so that repairs may be required as seldom as possible. The carriage-way is being laid with whinstone blocks, 3 in. broad, a material which, after mature investigation, has been preferred to wood or asphalte. The tramway rails and sleepers are formed of steel in one piece, joined in such a manner as to form a continuous solid mass. The widening of the footways on each side is much appreciated. That on the south side is to be formed of selenitic cement, the portion of which already laid presents a smooth and pleasing appearance: its durability remains to be tested, but it looks as if it would last well. Along the edge of this footway a perforated pipe is to be laid for the purpose of watering the street the more readily. A new sloping bank and terrace have been formed in the West Gardens, and to reach the walk, which is in a lower level than the old one, broad flights of steps have been formed at either end, which are provided with stone parapets and balusters. These gardens, which are now the property of the city, are becoming a favourite resort, and form a most enjoyable lounge in the very centre of the city.

OBAN NOW AND THEN.

Exactly 105 years ago a portly gentleman, leaving the delights of Fleet-street behind him for a while, was wandering "now on the wave and now on the land" through the Hebridean archipelago. After "doing" Skye and some of the minor islands, he landed on the island of Mull. Sir Allan McLean, of Lochbuy, kindest of hosts and cicerones, gave him a true Highland welcome. The parting had to come; and it was in this wise, writes Boswell, "we bade adieu to Lochbuy and our very kind conductor, Sir Allan McLean, on the shore of Mull, and then got into the ferry-boat, the bottom of which was strewn with branches of trees or bushes, upon which we sat." Seated thus, the deckless ferry-boat tacked and retacked for hours till she ran up the sound of Kerrerra, as the sun sank behind broad Benmore. Thanks to Messrs. Hutcheson & Co., the journey can now be accomplished in a couple of hours, and if the traveller can steal himself away from the sublimity of the scenery, he may pass into the saloon or descend into the cabin and seat himself on velvet cushions or recline on satin settees. To resume Boswell's narrative,—"We had a good day and a fine passage, and in the evening landed at Oban, where we found a tolerable inn. After having been so long confined at different times in islands, from which it was always uncertain when we could get away, it was comfortable to be now on the main-land, and to know that, if in health, we might get to any place in Scotland or England in a certain number of days." A certain number of days! How stands the time now? After a satisfactory breakfast at any of the numerous hotels at Oban, get on board, at 9 a.m. the coach for Dalmally; at this point transfer yourself to the railway train, and at 8·40 p.m. sit down to a late dinner or an early supper in merry Carlisle. Every reader of classical English knows how Dr. Johnson's heart warmed up as he trod the sacred soil of Iona, but not a word had he to say for Oban,—"the little bay," say certain philologists, but more probably, mingling Scandinavian and Celtic, "the fair haven." Eight hundred years ago or more, Hako, the Norwegian Viking, anchored his fleet in Oban Bay, and after him came Alexander II. of Scotland, to expel the Northmen, and to die within the storm-beaten walls of Dunolly Castle. Four hundred years pass away, and James V., the minstrel king, drops his anchor in "the fair haven," to rest and recruit his mariners before sailing further north, to inflict summary justice, not unmingled with vengeance, on the M'Leods, M'Donalds, and M'Rimmons. But long before the Norwegian galleys crunched with their keels the green and grey pebbles of Oban Bay, troops of pilgrims to Columba's Shrine had lingered on the strand, waiting to be conveyed to the hallowed island of Culdee Christianity.

Boswell does not say how Johnson passed the night in Oban. Morning came, and the travellers were in a hurry to reach Inveraray. Oban was powerless to assist them on their way. "We could get but one bridle here, which, according to the maxim *detur digniori*, was appropriated to Dr. Johnson's sheltie. We crossed in a ferry-boat a pretty wide lake, and on the further side of it, close by the shore, found a hut for our inn." For "hut," read "Port —— Hotel, Lochawe. Situation unrivalled. Visitors will find this hotel replete with home comforts. Passengers from the lake steamer landed at the Hotel pier." Only one bridle in Oban in the days of the burly lexicographer, and now "Posting in all its branches" is writ large over the stable-gates of Oban's numerous hotels. On arriving at the "hut," Boswell records, "we were much wet. I changed my clothes in part, and was at pains to get myself well dried. Dr. Johnson resolutely kept on all his clothes, wet as they were, letting them steam before the smoky turf fire." Such vapoury conduct as this on the Dr.'s part would not now be permitted across the threshold of the Port —— Hotel.

Who visits Oban nowadays for its own sweet sake? The Palace of Dunstaffnage, the seat of the Scottish monarchy previously to its transference to Scone, and whence came the Stone of Destiny, which now forms part of the Coronation Chair in Westminster, is within the limits of an after-dinner stroll. Dunolly Castle, the seat of the M'Dougalls, and the Casket of the Brooch of Lorn, and Clach-a-koin (the stone of the dog), a huge boulder, to which Fingal used to chain his staghound Bran, are almost at the doors of the hotels, and yet they are unvisited. The fact is that Oban is the Charing-cross or Clapham Junction of the Western Highlands. It would fain assert itself as a Scottish Brighton. But at present the traveller cares not to linger in the metropolis of Lorn. "It is true," remarks the *Oban Times*,—a well-got-up publication,—"that a good many visitors find their way to Oban in June and July, but they are only casuals, and it is not till August has commenced that Oban shows at its best; and when September commences, with it there begins an exodus to the south, which continues till the end of the month, by which time the last stranger has gone." Probably in two years at furthest Oban will be connected by rail with the south. Some assert that tourists will not linger at Oban when once it is connected with the outer world, but will betake themselves to places where the shriek of the locomotive does not waken the sleeping echoes. The proposed Oban terminus of this railway is sorely exercising the æsthetically inclined inhabitants. Professor Blackie, with his *perfervidum ingenium*, comes to the front, and though by no means sharing in Wordsworth's dainty sentiment against railways, writes:—"If it be the fact, as I now distinctly am given to understand, that the terminus is to be advanced into the Esplanade, this procedure will certainly not act as a contribution towards the beauty or the enjoyableness of Oban bay. For, observe that when people come to a Highland town they expect to see the Highlands, and all things most characteristically Highland, with as little of what reminds them of Paddington or Euston-square as possible." Elsewhere the Professor remarks, "As beauty to a woman, so is a certain picturesque character to a Highland town in a picturesque situation. People do not come to the Highlands to settle down amidst huge blocks of obtrusive ugliness"; and he follows these remarks up with an onslaught on certain of the obtrusive and ugly buildings of the town.

Nigh forty years have passed since the writer of these lines visited Oban for the first time. The one inn on the shore was sufficient to accommodate all the visitors. The town was then a departure point for Staffa and Iona, Glencoe and the Caledonian Canal. Few tourists were daring enough to penetrate further north to the Isle of Skye, which was his destination. With the exception of the baker's, there was not a shop, properly speaking, in the place.

Such was the Oban of 1840. The Oban of 1878 can, as the phrase goes, supply you with everything, from a needle to an anchor. It has its streets, its terraces, and its squares, its chief magistrate and town council, its churches of many denominations, and is now debating the question of a public park and recreation-ground. Its trade by sea and land, independently of those flitting swallows, the tourists, is rapidly increasing, and enthusiastic Obanites speak of their town as "the future Liverpool of the Highlands." Who shall predict what the vigorous little town will be forty years hence?

WHY THE DEATH-RATE IS NOT LOWER.

The following paper by Mr. E. B. Ellice-Clark, on "The Administration of the Public Health Laws," was read at the Stafford Congress of the Sanitary Institute:—

Great, if not insuperable, are the difficulties experienced in administering the sanitary laws. To the general public, who know that thirty years ago a Public Health Act was passed, and that legislation has been active on the subject ever since, it will be a matter of surprise to learn that in a majority of towns, and in nearly all rural districts, the sanitary laws have hitherto proved comparative failures, for the normal death-rate of England is as high in 1878 as it was in 1848. Nor is the cause of this difficult to find; probably no series of laws ever passed by the Legislature have interfered with the rights and privileges of property to such an extent as these Acts; therefore, when we find they have to be administered by what may be termed a voluntary-permissive, instead of an absolute, executive, it is not surprising to find that little progress has been made after more than a quarter of a century's work.

The permissive character of the Public Health Act places a power of inaction in the hands of those who are pecuniarily or otherwise interested in the *status quo*, which it is time should be removed for one of absolute authority. Those who have watched the actual progress made in giving people the essentials of a healthy and long life in cities have not failed to be struck with the slight advance made during the past twenty years to secure these. Towns are still undrained, having acres of filth beneath the houses; streets are unpaved. In the heart of the very metropolis itself houses are so badly built as to come tumbling about their owners' ears; hundreds and thousands of filth-reeking dens, unfit to be the resort of animals, still less the homes of mankind, cumber the earth in all our large towns, and too frequently are to be met with in the smaller towns and rural districts. And, notwithstanding the fact that Parliament considered the then evils so great as to pass an Act for their amelioration in 1848, not only do the same insanitary conditions exist, but others have grown and are growing up every day as bad as, if not worse than, those pointed out by the Health of Towns Commission. Streets that in no case should be less than 40 ft. in width, in more than one of our greatest cities may be made 20 ft. in width. Walls for dwellings, that in no case should be less than a brick thick, in scores of towns are built half a brick thick only. Cesspools and privies that sanitarians so loudly denounced forty years ago are being excavated and used at this day in the heart of many densely-populated towns. Back-to-back houses, without air-space at the rear or side, as required by bye-laws innumerable, are being constructed; and it is within the mark to say that the very evils pointed out so vividly by Mr. Chadwick and his co-workers so many years ago exist, more or less, in all their stages of rottenness, in nearly all the great centres of population throughout the kingdom, when we except about twelve of the drained and water-closet towns. In many of the former no really sustained effort has been made to carry out to a conclusion the intentions of the Legislature.

It is a matter much to be regretted, but none the less true, that, excepting the above-mentioned twelve towns, the majority of the members of the various sanitary authorities are not drawn from the classes having a sufficient and appreciative knowledge of the evils around them; nor have they the independence and ability so necessary to an administrative executive when discretionary powers, such as we find under bye-laws, are placed in their hands. It was anticipated, when Local Boards were first formed, that parochial business would receive an impetus which would raise it from the level into which it had sunk; that men would be attracted as candidates who would fearlessly carry out the reforms so urgently needed,—but such has not been the case. In many towns a great show has been made, and much money spent; for instance, towns have been sewered, but when persons have objected to connect their houses therewith, no one has had the courage to put the law into force to compel them. As the type of a town where the Sanitary Acts have been so great a failure, the writer may cite a city having a population of 80,000 souls where the Act of 1848 was adopted in 1852. Bye-laws were passed for all the matters that local authorities have to control: officers were appointed; main sewers were constructed, and all the machinery for securing the inhabitants healthy houses to live in, factories to labour at, and streets to walk in, was put into motion only to stop within a few months. Almost directly the authorities came to administer the laws they found themselves and their neighbours at open war, and the thought of the next November election was sufficient to deter them from interfering further with sanitation in its public action. The dead-lock has prevailed ever since. Twice only have offenders been brought before the justices for breaches of the building bye-laws, and nearly 3,000 houses have been erected in defiance of their existence. The party-walls were specified to be 9 in. thick in the bye-laws, but 4½ in. of badly-burnt clay, facetiously called brickwork, intervenes between each dwelling. This, instead of being carried through the roof, terminates at the bedroom ceiling; the latter, plastered in mud for the hour, very soon falling off, giving ventilation into the roof of the entire row, and, in the case of an epidemic, providing a flue for the conveyance of disease germs from house to house. The main sewers, admirably constructed a quarter of a century ago, are still without ventilation, and serve the purpose of carrying away slop and rain water only, for, side by side with the jerry wigwam, termed, with a spirit of irony, by the local auctioneer, "that eligible dwelling-house," is found the open privy, in the most confined parts of the town,—not by the score, but by the thousand,—in hundreds of cases not 3 ft. from the living-rooms; in a great number the walls for the reception of the filth being the lower part of the dwelling-house walls. Water being a commercial article of necessity, from which a net profit of 10 per cent. on capital can be made, is well supplied, the company having this work in hand being alone in doing its duty as a sanitary body. Densely-inhabited courts, unpaved, with every nook and cranny occupied, with all these filthy appendages without, and still worse within, can be found within ear-shot of the Council Chamber, where the Sanitary Authority holds its meetings.

The main commercial streets of the town have been widened, and a grand and lofty market-place, erected at immense outlay, rears its head above any other edifice in the town, where,—in parenthesis let it be named,—a costly iron roof, 80 ft. high, has been constructed for the purpose of sheltering the vendors of carrots, bacon, and old books, but not a penny-piece has been expended in sweeping away the courts entered from the almost equally narrow streets, under low archways, with the typical row of open privies staring you in the face as you enter, and much more of the kindred evils which fall on a neglected population springing up at every footstep. Year after year goes by, fortunes are piled up by the magnates who rule the town, but no man makes a lasting effort to remedy the evils, or if he does, receives his *quietus* in November, and the "cold shoulder" of his brother councillors.

The sanitary authority has met for a quarter of a century; its sanitary committee, whose chairman and a majority of the members are the owners of the courts, or who have friends who are, have sat in solemn deliberation 2,000 sittings, and yet no sign of a change takes place. No; nor will it, until a different class of men sweep them away from their stools of culpable indolence and negligence,—not until the law of the land is compulsory, and men are appointed to see it executed.

It will be asked, But why does not the town surveyor, or the medical officer, or the sanitary inspector expose these evils? Alas! the former holds his situation by a tenure as weak as a web, that can be broken by the very men who perpetuate these abominations; for they are the administrators of the law, and the givers and takers of offices. The surveyor is underpaid and overworked, and knowing the result of his spreading broadcast the state of the town, a seal is set upon his lips. The medical officer is a general practitioner, receiving 50*l.* a year for his public work, that is honestly worth 500*l.*; whose heart ached at the sight he saw for the first time when appointed, though he was bred and born in the town; whose reforming spirit entered into the office with the ardour of an enthusiast; but the *vis inertia* has sobered him down to the stern reality that the principal members of the Sanitary Board, who hold the keys of his office, are themselves the genii of filth; and although half his salary is paid by the Imperial Exchequer, which gives him an appeal to the Central Authority in London, such is the nature of social life in England, that were he to denounce the sanitary evils that dog his steps every hour, his private practice would be gone.

This is but one phase of the administration of the sanitary laws in urban districts. It is sufficient to have one evil under consideration at a time, otherwise there are many and grievous wrongs permitted and perpetrated by similar bodies, which require amending. The first work of sanitary law reform should be to supersede the permissive action of local authorities for one of compulsion. Bye-laws could be made for all the purposes of local government, and if sanitary authorities were compelled to make these, a great step would be gained.

The next point would be to see that these laws were carried out. And while we have unprotected local officers, it is impossible to expect they can take the initiative. Therefore

the Local Government Board should appoint inspectors to visit each town to see that the sanitary laws are actually at work. It is the case with coal-mines, alkali works, and lunatic asylums; and if every town council knew that an official report from year to year of the state of their district would appear, it would stir them to activity at once. Inquiries are now held after disease has broken out, and before money is borrowed for public works; but no inquiry is made as to whether or not the money borrowed is properly applied.

The Sanitary Acts were meant to be preventive; that they have not been so let the death-rate tell.

To those authorities who do their duty as many do, it would be a pleasure to have a report of the progress they are making, and the only possible objectors would be those who notoriously neglect their duties.

How better qualified members are to be obtained for sanitary boards, is a difficult question. Probably they will not be until public opinion is more enlightened as to the class of men that should represent them. Then we may hope to see high-minded impartial educated men filling the seats of local authorities. To educate the people in sanitary matters is the main object of this Institute. Successful administration must rest on the broad base of the people themselves, and it is to be hoped, by disseminating sanitary knowledge, this society will in time bring about a public demand for active honest administration of the public health laws.

LEAD POISONING.

In a paper on the Chemistry of Dirt, read at the Stafford Congress, Dr. H. C. Bartlett said: All commercial undertakings dealing with articles which may propagate and distribute disease to an unknown extent, have only one course to pursue. They must make war against dirt in any and every form, to accomplish which the best scientific advice and supervision is required. Less than the most advanced knowledge of the subject will not be found successful, for dirt assumes an infinity of disguises, and creeps in under many unsuspected cloaks. Untiring watchfulness and an intelligent comprehension of the details can alone combat with the ever present and insidious enemy.

True cleanliness is a matter of minutiæ, and admits of no subterfuge. If dirt can find a crack, a ledge, or an absorbent surface which cannot be reached by the ordinary method of cleaning, there dirt will accumulate, and where dirt is there will disease be also.

To avoid the possibility of dirt finding shelter in our domestic habitations, what must be done? Carry out, says the scientific sanitarian, the minutiæ of cleanliness by insisting upon an almost microscopic inspection, and use every valid means to maintain the large surfaces of the walls and ceilings as free as possible from injurious matters which may be absorbed or given out.

If we are to look to our neighbours for pains-taking cleanliness, we must go to Holland for example, where it is popularly believed that no gastronomic injuries would ensue from dining directly off the flooring boards or tiles. Beyond the delightful duty of scrubbing everything which is not painted, the Dutchman and his wife find no such esoteric and sanitary delight as in painting everything which cannot be scrubbed or rubbed bright. And the Dutchman is right.

No layer upon layer of paperhangings, with brown, gray, or green arsenical dust to slowly poison the more susceptible of the family,—no sham plaster walls, porous to sewer gas and corrupted with putrefied paste, can be allowed.

If we have lath and plaster, let it be painted, and if we cannot have wainscot or mahogany kept brilliant by continued cleanly friction and polish, let us have a clean, painted wooden surface, as artistic in tint and in the disposal of the colours and decoration as taste and means will permit; but to carry out a determined war against dirt and disease, let us have paint. These are no longer notions peculiar to the Dutch. They are sanitary axioms which we cannot afford to ignore.

But there is another side to the proposal "to paint and believe in paint," as I observed in the commencement of this paper; sometimes the very means taken to keep our dwelling clean adds to the real dirt. So it is with paint, for there be paints *and* paints; some leave little to be desired from a hygienic point of view; others, as I shall show, are injurious to health and even deadly in their direct effects.

In July, 1873, I was instructed to investigate the causes which brought about, I believe, some of the severest cases of lead-poisoning ever made public. I found at Devonport Dockyard twenty-four cases had occurred among the shipwrights working there, dating between May 3rd and June 30th. There were sixty-four painters employed, and on the average about four cases of lead-poisoning per annum were reported of these men, or at the rate of eight per cent. of those engaged in laying on the white-lead paint. When the space to be painted was confined and ill-ventilated, the symptoms were such as Dr. Thomas Brown, R.N., described in his report, which, by permission of the Director-General of the Medical Department of the Navy, I am able to quote. "After a few weeks' work a pasty, lustreless look appeared upon their faces. There was a sense of great depression and weakness, together with headache and loss of appetite. A metallic taste was sometimes complained of, and a blue line was observed upon the margin of the gums."

It was only after persevering for some weeks that the graver symptoms were produced, and the men, becoming wholly incapacitated, sought medical advice.

But it was among the shipwrights that the symptoms appeared in a still more aggravated form. These men were employed in cleaning off Day's cement, together with the paint and red lead. All the symptoms previously enumerated were presented, but in a more intense degree, attended with greater depression, and in every case epigastric pain was described as a dull heavy pain, giving the sensation of the bowels being drawn towards the spine. Cramp in the muscles of the extremities was common and of great severity, but it was observed with surprise that there were no cases of paralysis. The most stringent precautions have since been taken; perfect cleanliness of the skin, and frequent washing of the working clothes was insisted on. A chemical respirator was recommended to be worn while at work, and sulphuric acid drinks were always to be kept in readiness. No precautions, however, prevent the use of white or red lead paints being exceedingly injurious both to the painters and to those who inhabit rooms in which the paint has not properly dried.

Now comes the important question, how long a time must elapse before white-lead paints can be considered to be so perfectly dried as to be absolutely free from diffusing their injurious influence?

I will reply that it depends upon circumstances over which we have frequently no control. I state this feelingly, as in my house, a few doors from Grosvenor-square, London, the whole staircase from top to bottom has paint upon it which is not dry now, although it was laid on at Easter last, while I was at Brighton.

The slightest greasy deposit upon the old paint will prevent white-lead paints from ever really drying, and while a skin of apparently hard paint cheats the superficial observer, there is a continual exosmosis of volatile poisons being given off. The truth is not revealed until a general tone of depression and lowered vitality throughout the house arrests the attention of observers on the look-out for such causes and effects. Or, perchance, the spirit of cleanliness, that handmaiden to the goddess Hygeia, insists upon an early cleansing of the paint all over the house, with the unpleasant result of detaching the false skin of the new paint and leaving the greasy under-coat which no length of exposure will ever dry. It is no exaggeration to assert that very little paint, containing white-lead as its basis, becomes so hard and dry within months of its application, as to preclude the possibility of poisonous matters being given off.

I have had distinct proof that the injury accruing from the diffusion of lead in the air exists to an extent far surpassing the well-known poisonous influence of minute quantities of lead in drinking-water. I have, therefore, always recommended the substitution of zinc-white for white-lead, for the all-important reason that it is harmless. Many reasons, however, tend to limit the use of the ordinary zinc-white (oxide of zinc), the weightiest of which are that it does not possess the body of white-lead, will not cover so much surface, and is, therefore, not so economical either in labour or in cost. Several coats of zinc oxide are required to equal the opacity of white-lead, and in mixing with other colours, a much larger quantity of zinc oxide must be used.

I have lately had brought before me a new preparation of zinc, which is stated to have overcome all these defects. As I have carefully investigated its properties, I am happy to find that we have at length obtained an antiseptic white zinc paint which is free from the objections raised against zinc oxide. I find the oxy-sulphide of zinc pigment, invented by Mr. Thomas Griffiths, of the Liverpool Silicate Paint Company, to be a very curious instance of the fulfilment of the demands of sanitary science. We insisted that we must have a non-poisonous white as the basis of the oil-paints used in our dwellings. Zinc oxide was proposed, and, I believe, large fortunes have been made out of its manufacture, notwithstanding the drawbacks. The economics of labour and expenditure must, however, be included within the demands of sanitation, or the use of the best and most harmless of pigments is certain to be evaded. The fiat of the trade is issued against it, and it becomes doubly dear and difficult to ensure its use. Oxy-sulphide of zinc is then brought forward, as dense as white-lead, and as opaque, its covering qualities even exceeding those of the lead paint; and, as it does not change colour like white-lead, is as cheap, all things considered. We may welcome another powerful auxiliary, which, while innocent of itself, will help us immensely in our campaign against dirt and disease.

HOSPITALS FOR INFECTIOUS DISEASES.

On this subject Mr. Ernest Turner, architect, read a paper at Stafford. After some prefatory observations the writer said,—

I have not time to discuss in detail the principles upon which these permanent hospitals should be built; but for the practical success of the hospital it is necessary particularly to study the following conditions, which have been thus ably and tersely expressed in a Memorandum issued by the Local Government Board, as follows:—

The site must possess these qualifications:—

"Accessibility of situation, so that the sick may not be exhausted by long journeys; wholesomeness of situation; and, as far as consists with these conditions, an open, uncrowded neighbourhood."

Then, as regards the wards themselves, we must secure,—

"Adequate ward-space for each patient; approaching, as nearly as circumstances allow, to 2,000 cubic feet, with a floor-space of not less than 144 square feet.

Thoroughly good provision for ward ventilation (*i.e.*, for sufficient unceasing entrance of pure air and of exit of ward air), with arrangements, also, for immediate change of air in the whole ward when necessary.

Perfect security against the possibility of any foul air (as from privies or sinks) entering any ward.

Means of warming each ward in winter to a temperature of 60° Fahr., and of keeping it cool in summer."

How these requirements are to be best and most economically secured is the duty of the practical architect to study and advise.

Ventilation, as I have often pointed out, cannot be secured by any single appliance, patent or not, but must be considered in conjunction with warming, and requires for the attainment of a satisfactory system the intelligent application of our knowledge of physics, and a considerable amount of practical experience.

The cross-ventilated lobby between the ward and the closets may be regarded as essential to a properly-constructed hospital, and yet in some of the most recent designs we see this, and other considerations of the utmost importance from a sanitary point of view, sacrificed to obtain some external architectural effect.

For warming small wards the open ventilating grate will be found most convenient, but for larger institutions I most certainly prefer warming by hot water, on the score both of economy and efficiency.

"Next," says the Memorandum previously alluded to, "safe means must be provided (safe both for the hospital and for the neighbourhood) for disposing of excremental matters and of slops, and for cleansing and disinfecting infected linen and bedding; and facilities for obtaining, in the use of the hospital, the very strictest cleanliness of every part."

Experience has proved that for the hospitals

of which I am treating there is no better system than the earth-closet. In this connexion there is one little practical point to which I would call attention, namely, the advisability of providing an opening with a door in the wall through which the receptacle may be removed from the outside. For the disposal of slop-water I believe there is no better system than that generally known as intermittent downward filtration. For disinfecting linen, &c., a heating chamber must be provided.

For obtaining the strictest cleanliness of every part of the hospital, all mouldings, ledges, or corners where dirt can possibly accumulate should be carefully avoided. Wooden architraves round windows and doors are not only unnecessary, but positively objectionable; rounded corners and impermeable materials should be used in every part. For the floors there is nothing better than asphalte or Portland cement. For walls of wards, many materials have been used, and many failures have taken place. Glazed bricks or tiles have been recommended, but they are expensive, and the numerous joints necessary are very undesirable. What is required is a hard, smooth, non-absorbent surface, which may be washed down, and which will not be affected by disinfectants. Some time since at one hospital I tried to make a hard coloured cement in order to render unnecessary the application of any decorative material after the cement was trowelled. It was not wholly satisfactory, the difficulty being to obtain an even unclouded tint, and I gladly yield the palm to another inventor, who has produced a material which, in my opinion, is undoubtedly the best that can be used for the purpose. I refer to an enamel paint manufactured by the Liverpool Silicate Paint Company. It appears to be an admixture of paint with some peculiar gelatinous substance, and the effect produced is a beautiful enamelled surface in any required tint; it is much harder than any varnish I have ever seen, and its application is very simple. The manufacturers recommend that it be used over the silicate paint, but I have used it in one of the London hospitals with great success upon a cheaper material made by the same firm, which is called petrifying liquid, or washable distemper. This work has now stood for two years, and looks as well as when first executed.

In conclusion, let me say a few words upon cost of construction. You are all aware of the great increase in the cost of building, owing to the price of bricks and the rise in the wages of skilled workmen. Now, there is a much neglected material which is admirably adapted for, and in every way suitable to, buildings of this class. I refer to Portland cement concrete. It is stronger than brickwork, and the walls can therefore be built of less thickness. Moreover, it is considerably cheaper, since while the cost of brickwork varies from 14*l.* to 17*l.* per rod, the cost of Portland cement concrete is not greater than from 9*l.* 10*s.* to 11*l.* per rod, thus effecting a saving of about one-third on the cost of the walling. If the soil upon which the hospital is to be built be gravel (and this is always to be recommended), the greater part of the material is of course already on the ground. Even if no gravel is available, there are many materials of which the concrete may be made, such as burnt ballast, brick-bats, stone chippings, slate *débris*, flint, refuse from furnaces,—indeed, almost any hard substance, which, mixed with the cement, will form a most durable wall. If one good foreman be employed to see that the materials are properly gauged and mixed, nearly all the rest of the work may be done by common labourers. The inside of the walls can be more cheaply treated than if brickwork were employed, and externally a pleasing if not an artistic effect may be produced by a simple rough cast of sand, pebbles, &c. I have used this material with great success for dwelling-houses, factories, &c., and hope to induce a sanitary authority which I am now advising to use it for their hospital. I throw out the hint to sanitary authorities generally, in the hope that the great economic advantages over brickwork of Portland cement concrete will prove a new and potent factor in inducing them to establish these hospitals.

What Land is Coming to!—An American paper states that 360,000 acres of white oak timber and mineral land in Western Virginia were sold in New York the other day in large lots for about one cent an acre—probably the cheapest sale of land on record.

EXPERIMENTS IN PAVING IN THE CITY.

An experiment with reference to two new systems of paving has been going on under the auspices of the City authorities during the past few weeks. The locality in which the novel systems have been tried is Shoe-lane, which was selected as affording a fair test of the average wear and tear in a London street, the traffic passing along that thoroughfare between St. Bride's-street and Holborn being, indeed, very large. The principal material in the first system is granite. The blocks, however, are not, like those commonly used, of a depth of 9 in., but are merely 3 in. deep. Beneath the granite, and laid on a bed of concrete, are sheets of thick felting; and another peculiarity is that the interstices between the separate stones, instead of being filled with mortar, or sand, or tar and gravel, are filled up with lead, or rather an alloy in which lead is the main ingredient. Passers-by cannot help remarking the great diminution of noise as vehicles pass from the ordinary 9-in. granite paving over this short reach of 3-in. granite, felt, and lead pavement. So far as we can judge from personal inspection, this 3-in. granite as laid down in Shoe-lane will require a good deal of improvement before it can be adopted in place of any of the systems now in vogue. A week after it was laid down we noticed that it had become very uneven on the surface, and that a portion of the metal had been driven out of the interstices more or less over the whole area.

In the other system the principal material consists of asphalte. This is prepared in oblong bricks of about 15 in. long by 9 in. broad. They are ready for laying down, and can be very rapidly fixed, the process being very simple. They are laid on a bed of concrete without felt, and their chief peculiarity is that at intervals of 3 in. to 4 in. flat stars of iron are visible all over the surface, this expedient being intended to do away with the slipperiness, which is so great an objection to ordinary asphalte, by presenting a sufficient roughness or elevation of the surface to form a firm foothold for horses. On comparing this new asphalte and iron pavement with the old 9-in. granite and the new 3-in. granite, felt, and lead pavement, it is obvious that while far quieter than the former it is inferior to the latter in point of absence of noise. The iron stars appear to serve their purpose very well, and we shall not be surprised to hear that the asphalte and iron pavement proves a useful addition to the systems already in existence.

MESSRS. EPPS'S NEW COCOA MILLS.

On the site on which formerly stood the old Falcon Glass Works, in Holland-street, Bankside, Southwark, a very large new building is in course of erection for Messrs. Epps & Co., the well-known cocoa-manufacturers. The building will occupy a ground area of about 25,000 superficial feet, or more than half an acre in extent, and will have two bold main frontages, one to the north, and the other to the west. The north frontage, which is circular in form, has a sweep from east to west of 160 ft. in length, and is 65 ft. in height. It consists of the ground-floor and three lofty stories above, and in the centre is a covered carriage-way, 10 ft. in width, by which the vans and other conveyances will reach a large area at the south-east side of the building. This area will be covered over with a roof of glass. The building is faced with red Suffolk brick, relieved by Bath-stone dressings, projecting piers being introduced at intervals the whole length of the elevation, and carried up to the main cornice. The ground-floor portion of the frontage is rusticated. Above the ground-floor a stone string-course runs the entire length of the frontage, and a similar string-course above the first-story, whilst the second-floor is surmounted by a bold moulded stone cornice. Above the third-floor cantilevers support the main cornice, and the elevation is surmounted by a parapet. Each floor contains a range of nine two and three-light windows. The window-frames and sashes are all of iron. The west frontage is uniform in design with that on the north side, but a portion of it is only carried to a height of two stories above the ground-floor. It is 160 ft. in length, the extreme length of the two frontages being thus 320 ft. The principal entrance to the building is by a porch at the north-west angle, and above this entrance there is a clock-tower, surmounted by a dome, the height of which from the ground-line is 110 ft.

The internal arrangements of the building provide for the complete working of the various departments of the manufactory, as well having accommodation for the several *employés* who will dine and take other meals within the building. The basement contains the men's dining-room, a spacious apartment 37 ft. by 15 ft.; also the country packing-room, bottle-washing room, bin store, powder mills, and cooling-room. In this room arrangements are made by which the floor can at any time be flooded with water to assist in the process of cooling. The ground-floor contains, on the north-west side, the vestibule and waiting-rooms, clerks' offices and private room, luncheon room, and timekeeper's room; and on the north-east side there are several large apartments, including the stock-room, 50 ft. by 30 ft., together with the men's cloak-room, lavatories, and other conveniences. On this floor is also the great machine-room, an apartment 90 ft. long by 45 ft. wide, and immediately adjoining is the dry-block store, 50 ft. square. On the first floor, at the north end, is the lower labelling-room, which occupies nearly the whole of this portion of the floor. The women's tea and dining room, an apartment 46 ft. by 30 ft., is also on this floor. The second floor contains the upper labelling-room, the box-labelling room, the roasting-room, 40 ft. by 45 ft. The portion of the floor in which this room is situated has an open hopper roof for carrying off the fumes, and for ventilation purposes. The floor of this room is paved with tiles, laid on concrete. The second floor has also two large rooms containing stores and raw material, and on the upper floor is the packing-room, the packet and working room, and the powder store. On each floor tramways will be laid down in order to facilitate the conveyance of goods from one portion of the floor to another, and there are likewise lifts for raising and lowering goods from the basement to the top of the building. The whole of the staircases leading to the upper portions of the building are external, and composed entirely of brick and stone. There are also hydrants to each floor, so arranged externally that in case of fire it might be kept under control. At the top of the building there are two tanks, each of which will hold 10,000 gallons of water. It may be observed that the process of manufacture commences at the top of the building, where the raw material is stored, and is gradually conveyed down from floor to floor, until it is finally ready for sale and despatch.

At the rear of the main building, at the south-east side, stables, and residences for the men in charge of the horses and men, have been erected, together with an engine and boiler house, the engine-house being erected above the boiler-house, and resting on plate girders.

Mr. Edwin T. Hall is the architect of the building, and Messrs. Bangs are the contractors, the ironwork, including the columns, girders, roof principals, and tanks, having been supplied by Messrs. Stanley, Hall, & Co. The cost of the building, exclusive of fittings, will be 29,000*l.*, whilst the entire estimated cost, including the land, is about 50,000*l.*

MOUNTAIN RAILWAYS.

Sir,—A paragraph in the *Italia* informs us a road is to be constructed up Mount Vesuvius, by which, so it goes on to say, "one can attain the crater of the volcano comfortably and commodiously by means of a railroad, in the style of that of the Righi. The heads of the Ministry of Public Works in Italy (*Conseil Supérieur*) have given their consent to this project of the Mount Vesuvius Railway, presented by a banker, who has obtained from the Prefecture of Naples the concession of this line.

The railroad in question is to be constructed on the system called *Funiculaire*, and supported by iron columns, placed at a distance of six mètres apart. The length of the line will be 840 mètres, and the station at the summit of the mountain will be 420 mètres above the station, at the foot of the volcano. This railroad, with two lines, will be provided with eight carriages of four places each, of which four will ascend whilst four descend. A distance of 210 mètres will always be kept between each train. To avoid accidents, each carriage will be supplied with an automatic brake of a recently-patented invention, and destined, in case of a rupture of the cable, to stop the

carriage immediately. The mechanism will be put into movement by a fixed steam-engine of 12-horse power.

The mention of the Righi in this paragraph, and of the singular railway that enables travellers to accomplish so easily the ascent of this mountain, reminds me to ask you if it is generally known that the original idea of this mode of locomotion is claimed to be due to our clever "American cousins," however much it may have been improved on afterwards.

A pamphlet was published in Switzerland in 1868, entitled "Crossing the Alps by a new System of Cog-wheels and Rails," which caused a great sensation. In 1869 the Government of Lucerne was applied to, and they granted the concession for a railway up the Righi. The rail was opened from *Vitynau* to *Staffelhœhe*, May 21, 1871, and from *Staffelhœhe* to the summit of the mountain (*Kulm*), June 27th, 1873. But in referring to an American paper ("Frank Leslie's Illustrated Paper" of August 21, 1875), I see underneath an engraving of the "White House," Mount Washington, the following description, which places the original arrangement as far back as 1866:—"The Summit House stands upon Mount Washington, the highest of the White Mountains in New Hampshire, which has been aptly called the Switzerland of America. It is at an elevation of 6,291 ft. above the level of the sea. It has long been a favourite resort for tourists, and even before the present facilities for reaching it were afforded, hundreds made pilgrimages to its doors for the purpose of enjoying the grand scenery that can be viewed from this point. A horizon of nearly 600 miles bounds the prospect, and all around stand the lofty peaks of the giant mountains. If the sky is clear the eye can roam westward almost to the Catskills, northward into Canada to the mouth of the Saco, and eastward to where Mount Kaladin raises its giant head in the far west woods of Maine. The ascent of the mountain is now made easy by the Mount Washington Railroad, which is a triumph of engineering skill. The road was commenced in 1866, under the superintendence of Sylvester Marsh, the inventor, and after three years spent in its construction was opened to the public. The success which has attended the enterprise has been so marked as to almost revolutionise travel in many mountain regions. This road has served as the model of the road up the Righi in Switzerland.

The railroad is nearly three miles long, and ascends 3,625 ft., starting from a point 2,668 ft. above tide water. The maximum grade is 1,980 ft. to the mile, or a little more than 1 ft. in 3, while the average is very nearly 1 ft. in 4. The road is built in the most substantial manner, of timber interlaced and bolted, resting on the solid rock of the mountain side. Besides the usual rails there is a centre rail of peculiar construction to receive the motive-power. It consists of two bars of iron, with connecting cross pieces at a distance of every 4 in. A centre cog-wheel on the locomotive plays into this rail and secures a sure and steady mode of ascent and descent. The driving-wheel of the locomotive is geared into a smaller wheel which connects directly with the crank. Four revolutions of the engine are required to make one of the driving-wheel, thus sacrificing speed to power. The engine is not connected to the car, but simply pushes the car up the track. On the return it allows the car to follow it down at a slow rate of speed.

Near the east part of the ascent can be seen a tablet that marks the spot where Miss Lizzie Bourne, daughter of Judge Bourne, of Kennebuck, died near midnight, September, 1855, where her uncle and cousin kept watch till dawn. They had started in the afternoon without a guide to walk to the highest point; night and fog overtook them, and the young girl perished among the rocks, but a few rods from the house they were in search of. Near also is the shelving rock where a gentleman lost his life who attempted the mountains alone, and was overtaken by a storm. Other tales of suffering and adventure are told of this region, but since the completion of the railroad to the summit there is but little possibility of such accidents occurring.

The summit is now occupied as a station of the Meteorological Department of the United States Army, and observers have passed the entire winter there. They have experienced no unusual difficulty in making weekly visits to the country below, although they have been subjected to severe weather. The wind has sometimes assailed them with a velocity of a hundred miles per hour, and the thermometer at one time during the first year of observation indicated fifty-nine degrees below zero (Fahrenheit).

C. S.

THE NEW SEWAGE WORKS FOR THE CROYDON RURAL DISTRICT.

A very extensive sewerage scheme is about to be carried out by the Croydon Rural Sanitary Authority. The works about to be executed are in that portion of their district comprising Beddington, Merton, Mitcham, Morden, and Wallington, in order so to dispose of the sewage without polluting the river Wandle and the Beverley Brook, which flow through the district. The pollution of the Wandle had become so serious that, some time ago, a perpetual injunction was granted to restrain the Rural Sanitary Authority from discharging sewage into the river. During the last few years several projects for sewering the district have been brought forward, including one in 1874 for the construction of thirty-three miles of sewers, of which about five miles were on private property. In consequence, however, of the landowners withdrawing their offer to sell the land the project had to be abandoned, and another scheme, recommended by Mr. Baldwin Latham, and favourably reported upon by Colonel Cox, R.E., and Mr. Robert Rawlinson, C.B., and sanctioned by the Local Government Board, is now about to be carried out. This scheme involves the conveyance of the sewage to Byegrove Mead, and there purifying it by intermittent filtration. The scheme includes the construction of thirty-six miles of sewer, all of which are within existing or contemplated roads. About six miles of sewers are to be made in roads which have been constructed in the district since the scheme of 1874 was propounded, to meet the requirements of the district, parts of which are being rapidly built upon. The outfall at Byegrove Mead is partly in the parish of Mitcham and partly in Wimbledon. An area of thirty-eight acres has been purchased, of which about thirty acres are gravel, which will be surrounded by a puddle wall, and then be thoroughly drained. This area will then be used as a filter. The sewage will be prepared for the land in tanks, within a covered building, and the mud will be directly solidified by air-pressure in suitable presses, so as to be dealt with without creating a nuisance. The sewage from two-thirds of the whole district will reach the land by gravitation, and the remaining third will be required to be pumped to a height of about 20 ft.

The tender of Messrs. B. Cooke & Co., of Phœnix Wharf, Battersea, has been accepted for the construction of the works, and for treating the sewage for upwards of three years, during which it is calculated the works will be in hand. The land for the outfall works have been purchased at a cost of 11,300*l.*, and the contract for the works is between 60,000*l.* and 65,000*l.* The estimated total cost of the works, including engineering and superintendence, is about 90,000*l.*

Copyright in Artistic Property.—The resolutions of the International Congress on Artistic Property, held in Paris, recommend a copyright of 100 years. The right of reproduction should not necessarily be involved in the sale or in the presentation to the State of a work of art, except in the case of the portrait or statue of the vendor or any member of his family. Piracy should include the reproduction or imitation for sale by any different art or industry, and also the unauthorised transcription and setting of music. The assumption of an artist's name, signature, or distinctive mark should be punishable. Societies should be founded for the protection of artists' rights, the collection of dues for reproduction, representation, and execution, and the creation of relief funds. An international artistic society should also be founded. Foreign artists should have equal rights with natives, without condition of reciprocity, on simply proving their copyright in their own country. Artistic copyright treaties should be independent of commercial treaties, and should apply to works anterior to the conclusion of the treaties. Uniform legislation on artistic property is also desirable. The Congress request the French Minister of Education and Fine Arts to promote the meeting of an official international commission for the purpose of framing a uniform law.

THE NEW BELLS FOR ST. PAUL'S CATHEDRAL.

The bells in St. Paul's have been rung experimentally with satisfactory results, and we give a representation of the whole family and their cage.

It is about a year since the solitary bell which occupied the northern tower of the cathedral, and which used to call to divine service, was dismounted, and the works were commenced which were required to strengthen the floor that was to carry the new peal, which was being cast at Loughborough by Messrs. Taylor & Sons.

The tower itself was found to be admirably suited for a large peal of bells, and the eye of the vaulted chamber below was large enough to admit the new tenor, 5 ft. 9 in. in diameter; and as regards the support of the bells, nothing was required beyond some additional floor-beams and a system of strong struts carried down so as to bear on the walls of the tower, on an offset ready for them, at the level of the floor below. These beams and struts are of teak and oak.

The bell-frame, which was prepared at Loughborough, is of oak, and very massive. It is connected by bolts passing from the top of the frame to the bottom of the floor-beams. The works required for the preparation of the tower were executed by Mr. Geo. Shaw, of King Edward-street, under the direction of the surveyor to the fabric, Mr. Penrose.

Below is a list of the weights and notes of the bells, with the names of their donors:—

	Weight.			Note.	Donors.
No.	Cwt.	qr.	lb.		
1	8	1	16	F	The Drapers' Company.
2	9	1	15	E flat	
3	10	0	3	D	The Baroness Burdett Coutts and the Turners' Company.
4	11	3	21	C	
5	13	2	14	B flat	
6	14	0	4	A	
7	16	2	21	G	The Salters' Company.
8	22	1	18	F	The Merchant Taylors' Co.
9	28	0	7	E flat	The Fishmongers' Company.
10	30	2	22	D	The Clothworkers' Company.
11	44	2	0	C	The Grocers' Company.
12	62	0	0	B flat	The Corporation of London.
Total	271	3	1		

There are two points more than usually advantageous in the position of these bells,—one is the open character of the steeple above them, which will give great freedom to the emission of the vibrations, whilst their great height above the street (about 120 ft.) will prevent any harshness of sound from being a source of annoyance in the immediate vicinity.

It is expected that the first complete peal will be rung on All Saints-day, November 1.*

MONUMENT TO THE LATE LORD LYTTELTON, WORCESTER CATHEDRAL.

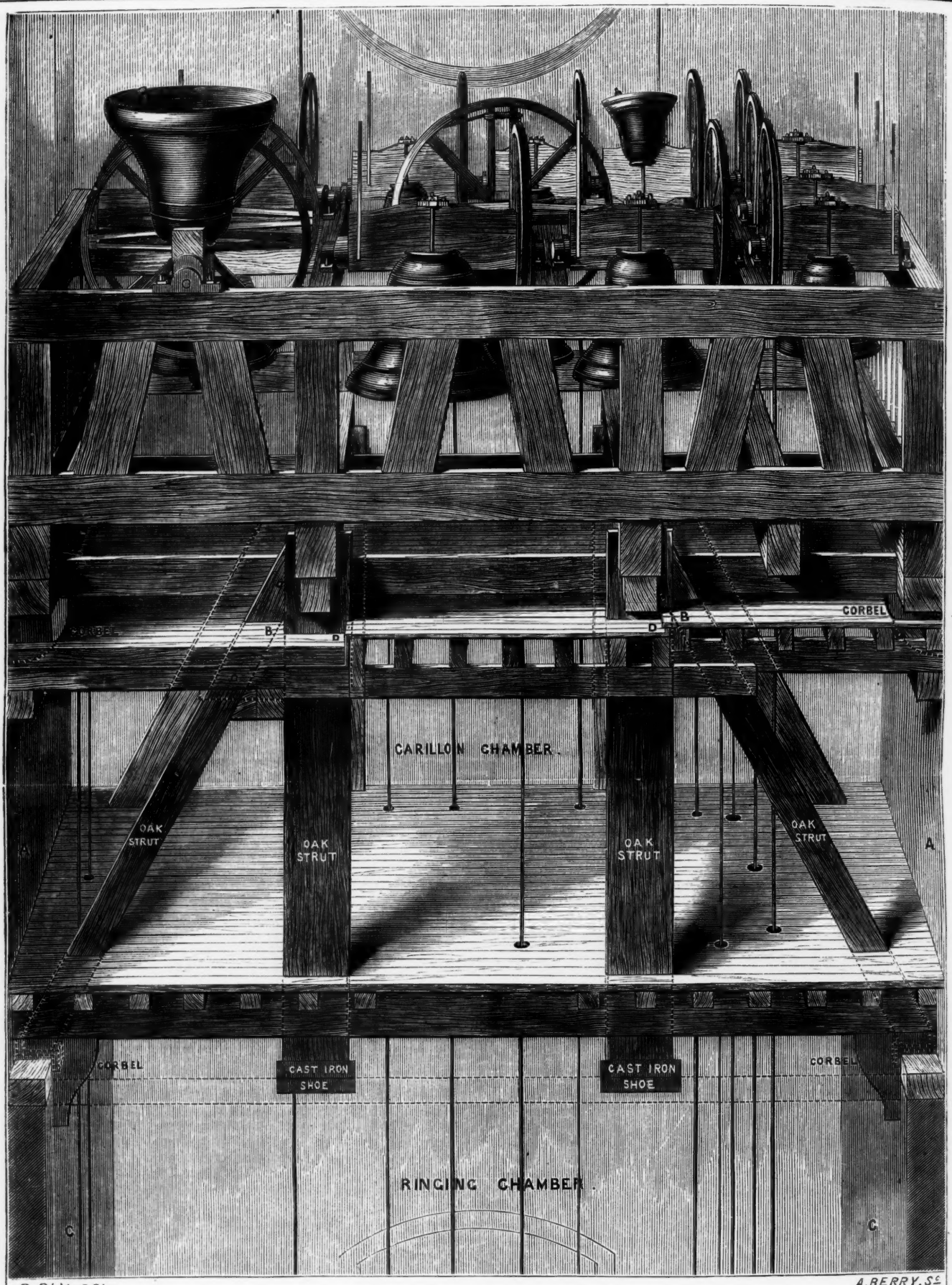
A few weeks ago we published particulars of a monument to the memory of the late Lord Lyttelton, executed by Mr. Jas. Forsyth, sculptor. It has since been erected in the transept at Worcester Cathedral. The general design of the monument was made by the late Sir G. G. Scott, R.A., and the execution of it is highly creditable to the sculptor. The likeness we can say, speaking from personal knowledge, is excellent.

The altar tomb, as we have already mentioned, is executed in alabaster and different coloured marbles; and shields emblazoned with armorial bearings, illustrating the genealogy of the Lyttelton family, occupy the panels. On the top of the tomb reposes the recumbent figure of the deceased, in pure white marble, draped as a peer, with the head inclined to the left. The following inscription runs round the top of the tomb:—

"Hoc · monumentum · in · memoriam · Georgii · Gulielmi · Baronis · Lyttelton · per · xxxvi. · annos · hujusce · comitatus · sub · Victoria · Regina · prætulis · amicii · quidam · lugentes · posuerunt · ex · iis · inter · quos · ut · Dei · gloriæ · hominumque · saluti · inserviret · operose · laborabat. Natus, · Martii · xxxi. · A.D. · M.DCCCXVII. · obiit · Aprilis · xix. · A.D. M.DCCCLXXVI."

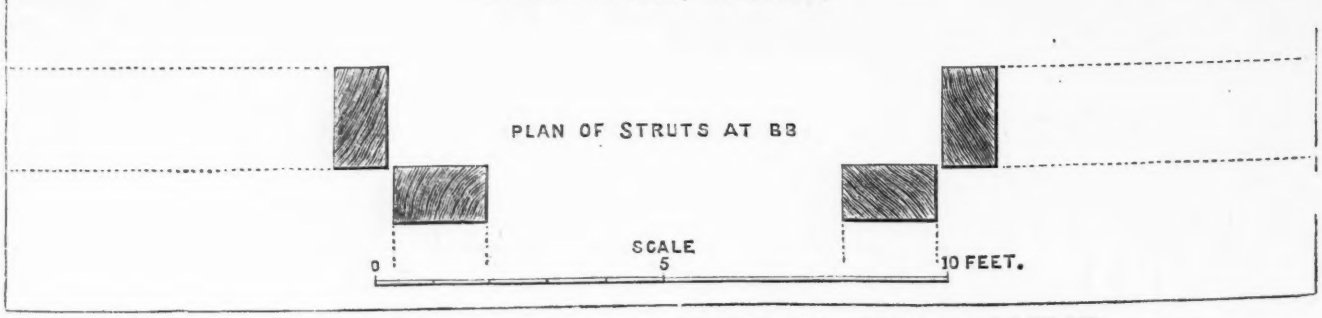
St. Alban's Cathedral.—Messrs. Longmire & Burge have received the order to proceed with the new roof for the nave, of the old high pitch. The present subscriptions will be about 2,600*l.* short of what is requisite for flat tiles, and about 3,000*l.* short for Coniston slates, and not enough for lead by at least 4,600*l.*, and more if the present low price of lead rises again.

* A view of the bells and bell-cage at Worcester Cathedral, Carillon, &c., will be found in our volume for 1874, pp. 239—242.

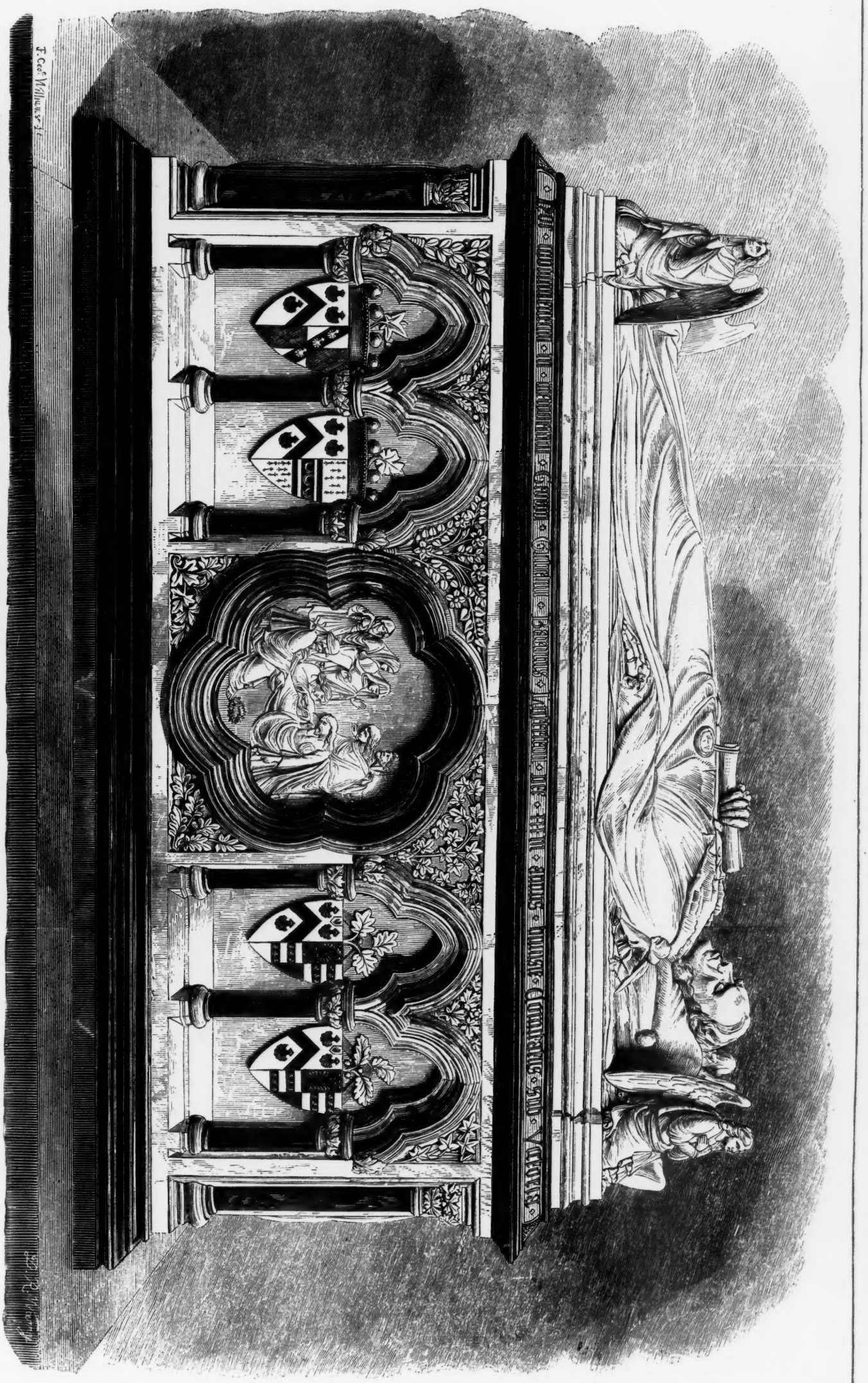


B. SLY DEL. A. BERRY. Sc.

THICKNESS OF THE WALL AT AA 5 FEET 9 INCHES.
CC 6 FEET 9 INCHES.
DD DIPS TO CARRY OFF WATER.



THE NEW BELLS AND BELL-CAGE, ST. PAUL'S CATHEDRAL, LONDON.



MONUMENT TO THE LATE LORD LYTTELTON, WORCESTER CATHEDRAL. — The late Sir G. G. Scott, R.A., Architect; Mr. J. Forsyth, Sculptor.]

ANOMALIES IN ARCHITECTS' PRACTICE.

Sir,—I hope this question will be thoroughly ventilated now it is before the building public, for there are certainly many matters needing reform.

Architects in many cases show weakness in not taking a firmer stand with their clients. If extra work is necessary, the client's consent should be forthwith obtained, and an order given for it, but this is not always done because the architect fears to show the client he is increasing the amount to be paid, and he has probably told him it *shall* not exceed a certain sum; then, at the end of the work there is a cutting down of extras to keep the account within the promised limit. I do not think an architect should have arbitrary power to define what is an *extra*. If neither specification nor plans show what is required, then it should be paid for, unless taken in the quantities, and they form part of the contract; if they do they should combine the two, and if it is not taken in the quantities then it is an extra, even if it is shown, as the builder is not paid for it.

I am certain, from experience, that the reason contractors lose, as they often do, over contracts, is that they do not get paid for the extra work that exists. In large firms many extras are passed unnoticed.

I submit the following suggestions, and should like to offer more if the subject is continued.

1. All *details*, for it is in details most disputed items arise, should be sent to the contractor's *offices*, not works, for his inspection before putting them in hand.

2. A list of all extra work the builder claims should be sent to the architect before "measuring up."

3. A competent surveyor in *all* cases should be appointed to meet the builder's man and measure up; this does away with what your correspondent sarcastically calls the builder's *pourparlers*.

4. The old forms of contract should be ignored, and only the one used that was approved by the Institute of Architects and Builders' Society, a copy of which has been published.

Contractor.

Sir,—I should like to add another to the notes, for which you found room on p. 1021, as to variations from contractors, before making remarks on another "anomaly" to which Mr. T. Roger Smith called attention in his interesting letter on p. 941.

The candid friend of architects, who does not fail to tell them and the world of all their faults,—actual, possible, and impossible,—has made a great point of orders for extras being sanctioned in writing in every case by the employer,—implying that architects have a happy knack of landing employers in all sorts of monetary difficulties by straining their powers as agents. I fancy I have detected a little sharpness of tone in dealing with this, and have not been surprised. Architects who have worked for a goodly term of years, doing their duty by employers, may be pardoned for feeling their self-satisfaction profaned when receiving rough blows from an untender hand,—it is so difficult to deal quite temperately with a critic who conveys, by a tone of voice, or by written innuendo, more than he says, or perhaps than he would care to say, or to mean. No practical person disputes the value of an employer's interest in a work, nor of his control of it, so long as the control is very wise, intelligent, equable, and excellent generally; nor is there any wish to say that a very distinct authorisation of extras (and if possible an agreement as to the exact sum to be paid in each case), is not a very proper and satisfactory piece of business. The only objection is, that in real life, and with employers in general, especially with compound employers,—such as committees, boards, &c.,—the thing is impossible. The avoidance of delays in critical stages of a work, the absence of the employer,—his laziness or indifference it may be; his varying moods,—but why make a list of all the rocks and sands among which the architect must steer discreetly if he wants to move at all? No doubt, as a barrister feels and argues in his everyday experience, a wise man will choose cautiously those who are to act for him, and will not tie them up with a short chain.

Let us, in order to get anomaly No. 2 fairly before us, quote the gist of three clauses of an ordinary building contract:—"The contractor shall . . . . . complete and deliver over to Mr. — on or before the — day of —, &c. [liquidated and ascertained damages stated at a certain rate]. If the works shall be suspended during any local or general strike, then such time for the completion of the works may be delayed for a period equal to the time of such suspension. The architect shall have power to make such allowance of time to the contractor as he may deem fit and just on account of badness of weather, additions, enlargements, alterations, deviations, or any other cause whatsoever, and such allowance of time shall be," &c.

Mr. Smith's questions seem to lead on to such as these:—Are such clauses bits of a comedy,—light trifles that no one need seriously regard? Would it not be better if everybody agreed to treat them seriously, or else to cut them out of ordinary contracts altogether? Would a mere undertaking on the part of a contractor to reach completion at such a time as might be considered reasonable, be less or more effective? Might not then the cases where expedition is essential be treated in an exceptional way, and the contractor bound and kept most rigidly to his time,—the damages being charged to him, without the employer regarding himself, and being talked of by others, as an objectionable Shylock?

1. Mr. Smith's statement that deductions for damage by delay,—although threatened frequently,—are rarely enforced is true enough,—but he hardly seems to do entire justice to contractors by his way of putting it. Dilatoriness, muddle, bungling, miscalculation,—a whole alphabet of charges might be hurled at the building trade;—and be no truer than any other "charging at large;"—that is, true enough to make the charge unpleasant, and untrue enough to make it unjust. I have known men who prided themselves, and built reputation, on finishing to a specified date. It is difficult and hazardous to speak without a heap of statistics, but I fancy that a large majority of buildings for trade purposes are really done to time. A contractor catches pretty cleverly the tone of employer, architect, and the rest; and, when he finds that literal compliance is meant,—literally he complies, if at all possible. No one need be expected or asked to have relays, or even to drive his men to lengthy overtime,—with all its admitted evils both to the men and the work,—when he knows that the specified time has been fixed almost at hazard, and is not even remembered by the employer.

2. Building contractors have, however, acquired, or been credited with, a reputation for delays, which should be got rid of as soon as possible. If architects would apply to sufficient builders for tenders, contractors would not, in their anxiety to keep busy, snatch at more work than they can manage; if architects would always select men who are strong enough for any special work, incapable people would not mar their own and other people's reputation by going into matters with which they cannot grapple properly; if, in short, we could always secure the right sort of people at the right time, in the right relation to one another, there would be little excuse for delays,—or, indeed, for other complaints as well.

3. One ought not to shirk the hint by "A Firm of London Builders" (p. 995) that architects are sometimes blameworthy,—"not supplying such information and documents as are necessary for conducting the work." I understand the suggestion to be that a contractor might make a special claim, if he liked, on that account. In an extreme case, no doubt, he might, and get it allowed too, but such extreme cases must be very rare indeed. Contractors have been known to exhibit great skill in divining as to negotiations with neighbours, possible modifications in the superstructure, and so on; and an almost superhuman prevoyance in consequence,—an anxiety beyond praise to be prepared beforehand with the work in those parts of the building. They have been able, in this mood of virtue, to write recitals of their anxieties, which a year after would read like the arraignment of an injurious architect, and would excuse any quantity of delay. A good surveyor contrives to give himself useful points on his base lines, which can be brought in again when he comes back. A contractor may pardonably feel a wish to train himself in all kinds of forethought, and to imitate exemplars, but he should in his own business avoid "base lines," and plotting too.

4. The result of all considerations would be to maintain the present system; the defined time for completion, the damage for non-completion, the extension of time for adequate reasons. The time should be settled very carefully with a view of giving ample time, for a contractor of the class who is to take the contract. It might be possible to classify rates of progress as (1) ordinary time; (2) quick time; (3) special rate; and even to get some authoritative statement from contractors as to what they would consider adequate average time at each rate of progress in certain well-understood types of building,—a 10,000*l.* church, a 4,000*l.* parsonage, a 12,000*l.* block of warehouse buildings, &c. Such model accepted, times could be modified to suit cases. Then the damages should be put at the probable damage, and not at a fancy rate. When there are no adequate reasons for extension of time, it should be the custom to enforce the contract literally. "Adequate reasons" would, of course, be an elastic phrase, interpreted by the architect who would weigh the facts and would find generally (one would hope) that the contractor had come near to his duty, and would rarely have to find that damages had accrued except where incapacity, or wilful neglect, or disregard of reasonable instructions, were too decided to be overlooked. Some one may say that this is pretty much what every body is doing now; but I do not think it is. We are a little uncertain in movement at present, every one seems agreed; and we might as well be more precise if not actually more active. In the words of Mr. Field (p. 995),—"Let us amend our practice as may be needful"; to do this, I think we need make no change in the forms of our documents.

S. F. C.

MANCHESTER SCHOOL OF ART.

NEW PREMISES.

A site in Cavendish-street has been secured by the committee for the erection of new buildings for the Manchester School of Art. The cost of the land has been 10,500*l.*, and, according to the *Manchester Courier*, an additional sum of 23,000*l.* will be required in order to defray the cost of the new buildings. Of this sum nearly 16,000*l.* have been subscribed, and so sanguine do the committee feel that the people of Manchester, recognising the importance of the institution, will subscribe the balance, that they have resolved to proceed with the erection of the buildings. The architect is Mr. G. T. Redmayne, of King-street, who has prepared a design which is an adaptation of the Romanesque in style, and the building will have a frontage to Cavendish-street of 148 ft., and extend back with its side to Ormond-street a distance of abont 70 ft. It will consist of a central portion or body with two wings, one at each end. The height of the central portion will be about 50 ft., and the wings will be some 70 ft. high. On the ground-floor there will be rooms for the male senior and junior students, and rooms also for the head-master and the secretary; in addition to which there will be a reading-room, a mechanical drawing-room, male cloak-room, a library, a committee-room, lavatories, and a room for the porter. On the first floor there will be the antique-room, a model-room, and rooms for the female students, second and third masters' rooms, and lavatories. There will be a number of private studios on the second floor. Here also there will be two galleries,—one at each end of the building,—in which it is proposed to arrange a permanent collection of works of art.

A MEMORIAL FOUNTAIN AT THE EAST END.

The representatives of the late Sir Francis Goldsmid, M.P., who was recently killed at the Waterloo Railway Station, have resolved upon erecting a fountain to his memory in Dock-street, at the East End. The structure will be of marble and granite, and, it is said, will be very handsome. It will entail no cost to the local authorities. The permission to erect the fountain in place of one now standing on the spot, which is in a dilapidated condition, was made to the Whitechapel Board of Works last week, when the Board readily complied with the request.

The New Eddystone Lighthouse.—The contract for the supply of all the granite for this important work has been given to Messrs. Shearer, Smith, & Co., of the Dalbeattie Granite Works.

DEATH OF SIR FRANCIS GRANT, P.R.A.

It is our sad duty this week to chronicle the death of Sir Francis Grant, president of the Royal Academy. He had been in feeble health for the past two or three years, and suddenly, on the morning of Saturday last, he was struck down by heart disease, at his residence, the Lodge, Melton Mowbray. The fourth son of Mr. Francis Grant, of Kilgraston, Perthshire, he was born in Edinburgh in 1803, and was, therefore, in his seventy-fifth year. As a young man, he was greatly devoted to field sports, and this circumstance influenced him in some of his earlier works, notably in "The Meet of his Majesty's Staghounds" and "Melton Hunt." According to a passage in the diary of Sir Walter Scott, whom he visited at Abbotsford, he was accustomed to avow his purpose of spending his patrimony in field pursuits, and of then devoting himself to the law. The fortune soon went, but Grant had by this time discovered that the bent of his talents lay in the direction, not of law, but of art. Confident of receiving liberal support from his many distinguished friends, he decided, in or about the year 1829, to make painting his profession, and studied drawing under Somerville, a local artist of some repute. During this time he numbered among his most intimate friends Sir J. Watson Gordon (subsequently president of the Royal Scottish Academy), and by the kindness of the Earl of Elgin, who always gave him much encouragement and assistance, he was enabled to form his taste in that nobleman's gallery. He soon began to "make his mark." Proceeding to London, his first picture was exhibited in the Royal Academy (then quartered at Somerset House) in 1834. From the outset he devoted himself chiefly to portraiture, even in the hunting scenes before referred to, for the "Meet of his Majesty's Staghounds," painted in 1837 for the Earl of Chesterfield, contains forty-six portraits of celebrated sportsmen of the time. His facile brush has depicted the lineaments of some of the most celebrated men of his time, including Macaulay, Mr. Disraeli, Sir Edwin Landseer, and Lords Hardinge, Gough, Campbell, Derby, Palmerston, Clyde, Russell, Stanley, and his brother, General Sir J. Hope Grant, G.C.B., who, after a long and brilliant career in the service of the State, died three years ago.

Sir Francis (then Mr.) Grant was elected an Associate of the Royal Academy in 1842, and in 1851 he became a full Academician. In 1855 he received one of the three first-class gold medals awarded to British artists at the Paris International Exhibition of that year for his "Meet of his Majesty's Staghounds," and was elected an honorary member of the Société d'Artistes Belges. In 1866 the president's chair in the Royal Academy having become vacant, through the death of Sir Charles Eastlake, and Sir Edwin Landseer declining to serve, and Mr. Maclise not being desirous of the post, Mr. Grant was elected, on February 1st, to the vacant presidential chair by 23 votes out of 29, as the ninth president of the R.A., and soon after received, according to precedent, the honour of knighthood. His geniality and courtliness of manner soon made him very popular at the annual Academy banquets. In 1870, the University of Oxford conferred upon him the honorary degree of D.C.L. He was also an honorary member of the Royal Scottish Academy, and of the Pennsylvania Academy of Fine Arts. He married, early in his career, Miss Emily Farquharson, of Invercauld, and, subsequently, a daughter of Mr. and Lady Elizabeth Norman, through whom he became allied to the noble house of Manners. Lady Grant and a numerous family survive him.

Mr. Leighton is most generally named as Sir Francis's successor as President of the Academy. Mr. Millais, Sir John Gilbert, and Mr. Calderon are also mentioned as possible candidates.

New Park for Newcastle.—At the last meeting of the Newcastle-on-Tyne Town Council, a letter was read from Sir William Armstrong, in which he offered to present to the town twenty-six acres of land adjoining the twenty-two acres recently purchased by the Corporation for an east-end park. The land is worth about 20,000*l*. The gift was accepted with thanks, and it was proposed to call the park the "Armstrong Park."

OBITUARY.

Mr. Chas. Charnock Nelson, Architect.—We hear with great personal regret of the death of this gentleman, which took place on the 13th of September last. Mr. Nelson was elected a Fellow of the Royal Institute of British Architects in 1842, and for a number of years acted with the greatest advantage to the Institute as honorary secretary, devoting, indeed, the greater part of his time to the duties of the office. His pecuniary means being ample, he seems to have made no efforts to establish a practice. He afterwards served as a vice-president of the Institute. He was skilled as a linguist, and possessed a cultivated mind. Mr. Nelson was elected a Fellow of the Society of Antiquaries in 1862. We understand that he has left "all his books of an architectural character" to the Institute.

Mr. Charles Baily, Architect. — An inquest has been held at Reigate on the body of Mr. Charles Baily, 63, of Eastleigh House, a retired architect. Elizabeth Barton, a trained nurse, stated that she had been in attendance on Mr. Baily for some weeks, and slept in the dressing-room adjoining his bed-room. All through Monday night he was very violent, and employed himself in moving his furniture about, a caprice in which he frequently indulged. While listening to his movements early on Tuesday morning, she heard a strange noise outside the house, but paid no immediate heed to it. Presently, there being unwonted silence in his room, she became alarmed, and rushing in, found the window open and Mr. Baily gone. She then went downstairs and found him lying on the ground, conscious but in great pain. With assistance she carried him to his room, where he died on the following day. The window out of which he forced himself was only 14 in. in width, and he fell about 20 ft. The jury found a verdict of "Suicide while of unsound mind." Mr. Baily was an excellent draughtsman and a good antiquary; and was for some years chief assistant in the office of the City Architect, London.

Mr. J. T. Woodhouse, C.E.—The death is announced of Mr. John Thomas Woodhouse, civil and mining engineer, Derby. He was born in 1811, and was a pupil of Mr. Twigg, mining engineer, Chesterfield. He held the post of consulting mining engineer to the Duchy of Lancaster; and was the first president of the Midland Institute of Mining, Civil, and Mechanical Engineers.

LIVERPOOL ART CLUB.

Thanks to Mr. W. Bragge, F.S.A., a remarkable collection of Chinese snuff-bottles and other articles, in enamel, porcelain, and ivory, connected with the use of tobacco, is on view at the rooms of this club. Mr. Bragge points out that this is the only collection, of any magnitude, of Chinese snuff-bottles yet formed; and in no work on Chinese manners and customs which he has had the opportunity of consulting, has he found any adequate description of the Chinese appliances for snuff-taking. Yet this collection shows that the practice is in extensive use amongst all classes, and that, as in all other snuff-taking nations, the utmost skill, labour, and ingenuity are lavished upon these receptacles of the fragrant powder, for 600 bottles are shown, and afford a complete illustration of the skill of the Chinese worker in porcelain, glass, enamel, and stone.

None of these bottles can claim any high antiquity. Tobacco was not introduced into China until the end of the sixteenth century.

Many of the specimens of porcelain and jasper-ware are equal in colour, density, and surface to anything which the great Staffordshire potter ever produced. In the preparation of various colours, and in the making of variegated glass, the Chinese are evidently as clever as the Venetians of the Middle Ages, or the more ancient Romans, but they do not appear to have discovered or used the Venetian practice of uniting sticks of coloured glass so as to form flowered or geometrical patterns.

Extreme and unwearying patience is evidently a characteristic of the Chinese workman. One can understand how the irregular lump of the hardest rock crystal, chalcedony, or cornelian, is ground and rubbed to its outward form, and how its surface carving is done, but as to the manner in which the interior of the bottle has been ground out, and its inside perfectly polished, the owner of the collection can give no information. Should any of our readers be able to throw light upon this subject, or upon their mode of manufacturing variegated glass, we shall be glad to hear.

The session was opened on Monday, the 7th instant, when Mr. Bragge was entertained at dinner. The exhibition also includes some singularly interesting specimens of Italian carved woodwork, of the fifteenth and sixteenth centuries.

ART EXHIBITIONS.

Cork.—The twelfth exhibition of the Irish Fine Art Society was opened on the 30th ult. at the Round Room, Opera House. The Society had its origin eight years ago in the town of Lismore, when a few friends agreed to form a small amateur society for the mutual encouragement of the fine arts.

Reading. — A loan exhibition of paintings, water-colour drawings, engravings, and photographs, was opened on the 2nd inst., in the Victoria Hall, Reading. It contains over 500 pictures.

ARCHÆOLOGICAL SOCIETIES.

Glasgow.—The Glasgow Archæological Society had its annual excursion on the 26th ult.,—to Linlithgow. The party, on arriving at their destination, first examined the curious old square tower near the railway station, which at one time belonged to the Knights Templars, and subsequently to the Hospitallers, and which is said to have been for a time the Scottish Mint. Afterwards the old church of St. Michael and the ruins of the palace were visited, and a couple of hours were spent pleasantly in rambling about the latter, a paper on the history of which was read by Mr. J. D. Duncan, honorary secretary. Coming back to their hotel, the members next drove over to Bridgeness, at which place the Antonine Wall terminated. Here they were met by Mr. Cadell, of Grange, who pointed out the spot where the tablet erected by the Second Legion, now in the Antiquarian Museum in Edinburgh, was found on his estate in April, 1868. The party then walked along the line of the wall to the neighbourhood of Borrowstounness, returning thence to Linlithgow. Subsequently the members and their friends dined together,—Dr. Mackinlay in the chair,—and returned to Glasgow in the evening.

Chester.—At a meeting of the Chester Archæological Society, on the 30th ult., Mr. John Cordy Jeaffreson (who has during the last two months been inspecting the records of the city on behalf of Her Majesty's Commission on Historical Manuscripts), delivered an exceedingly interesting lecture on "The Charters and Records of the City of Chester."

North Staffordshire.—The North Staffordshire Field Club and Archæological Society had an excursion the other day to Derbyshire, under the guidance of Mr. Lynam, of Stoke. The places visited included Bakewell Church, Haddon Hall, Eyam Church, Tideswell Church, and the "Blue John Mine."

Meath.—At the last monthly meeting of the Meath Antiquarian Society, the committee received instructions to examine some of the ancient buildings in the neighbourhood, with the view of adopting measures for their preservation.

Holyrood Palace, Edinburgh.—Holyrood Palace is being reroofed. The roof just removed is believed to date from the year 1671, when the palace was partially rebuilt by Charles II. in its present quadrangular form, after a plan by Sir William Bruce. The native fir had been used for its couples and ties; but through the lapse of time the woodwork had become so dilapidated that some years ago it was found necessary to shore up a considerable portion of it, lest it should give way beneath the weight of the slates. Latterly the timber had become so rotten as to render it evidently unsafe that the roof should be left for another winter. The timbers of the new roof are to be of well-seasoned red pine, from the Baltic; while for its outer covering new slates will be used. The work, which will occupy several months, is being carried out under the superintendence of H.M. Board of Works. Messrs. Beattie are doing the joiner-work; Mr. Andrew Slater, Canongate, is the slater; and Messrs. Stewart & Rae, Register-street, are the plumbers.

THE ELECTRIC LIGHT.

The electric light, in one form or another, is just now attracting a great deal of attention, and is beginning to be adopted for practical use in this country.

In London, Messrs. Wells & Co., stove and chimney-piece makers, of High-street, Shoreditch (opposite the church), having obtained permission from the Shoreditch Vestry, have erected in front of their premises two lamp-standards for the purpose of displaying the Jablochkoff light, as used in the Avenue de l'Opéra and other places in Paris. The light was tried here for the first time on Wednesday evening, with a tolerable measure of success, inside as well as outside the building. Messrs. Wells's premises, newly built, are well adapted for the exhibition of the light indoors, consisting as they mainly do, not of an ordinary storied building, but of a large and lofty oblong block, open from the ground-floor level to the skylight in the roof, four galleries running round the entire area one above another in lieu of the ordinary stories. Four of the Jablochkoff lights are fitted up inside the building, two about 15 ft. from the ground, supported on curved rods carried across, one towards each end, from side to side on the floor level of the first-floor gallery; and two some 8 ft. above the level of the second-floor gallery, one at each end, supported by a movable arm or bracket projecting outwards and upwards from the hand-rail of the second-floor gallery. Two other lights are in the street. The motive power required to produce the light is supplied by the steam-engine in ordinary use at the works. The light is generated by two machines, the invention and manufacture of M. Gramme, of Paris. These machines are made to revolve 1,000 and 1,100 times respectively per minute. They are capable of producing a current sufficient for six lamps, and require a power equal to about one-horse per lamp. The material consumed (if such a term may be allowed) is graphite. The electric current passing from one rod of this graphite to another, over a short space of less than ¼ in., called the "electric arc," heats the extremities of these rods to an intense state of incandescence. This is the source of the light. The system is known by the name of its inventor, M. Jablochkoff, and is furnished by the owners of the patent, the Société Générale d'Electricité, Paris. The carbon rods are placed side by side, separated by a slip of kaolin, over which the electric arc passes. In order to ensure equal combustion of the rods, an "alternative" current is adopted, for which purpose two machines are employed. In other words, currents pass from rod to rod in opposite directions at the rate of about 8,000 per minute, a total of double that number, and the carbons are equally consumed. Each lamp is provided with holders for four "candles," but only one is used at one time. Each "candle" will last for one hour and a half. When it is nearly consumed a switch moved by hand, or automatically by an electro-magnet, turns the current to another candle. The light is placed within opaline globes, about 2 ft. in diameter, for the purpose of diffusion. The colour of the light is pure white, and each lamp is considered to be equal to about 100 gas-lights.

Mr. John Blount, C.E., in a letter to the *Times*, quotes statistics gleaned in Paris to show that the cost of electric lighting is greater than by the present mode of gas, but, he says:—

"Improvements are being made which will diminish this cost, especially that of the burner, if it may be so termed, which is now the principal item of expense. As electricity cannot be employed for ordinary domestic use, as is gas, and it is too expensive for street illumination, except in special cases, there is no present danger of its affecting, to any serious extent, the interests of gas companies. What may be the results of further experience and of scientific research it is impossible to foretell, but that electric lighting will pass away with the Paris Exhibition, as has been stated, no one can seriously suppose. The fact is already established that the light can be, and is made pleasant to the eye, and as a means of illumination is practically easy of execution. For special situations where effective illumination is requisite it is eminently adapted, and for large establishments, workshops, railway stations, and such like places, it is not only well suited, but could, with advantage, be adopted. One important element the electric light possesses is its purity; it gives off no smell, nor does it heat or contaminate the air, and with this light colours appear in their true tints. Lighting and extinguishing are instantaneous, and the risk of fire or explosion is done away with."

The *Daily News*, in an article on the subject, having stated that "even in the streets, at a great distance and modified by opaque glass, it [the light] is almost too much for the eye to bear directly, and in a room it would be out of the question," Mr. E. Nelson Haxell, of the Strand, writes to say that

"On the Boulevard des Italiens, within a few doors of the Place de l'Opéra, there is a shop, a newspaper-office if I mistake not, lighted by a small electric light, which, so far from being painful to the eye, is pleasing rather than contrariwise. The light is perfectly steady, shaded by a species of opal, not ground glass, and is so attractive that the office is literally besieged nightly. Speaking generally, I may say that the light is coming into universal use in most open spaces. The Avenue de l'Opéra is lighted entirely with it, although the gas-lights are occasionally lighted, apparently to point the contrast only. The standards are about 5 ft. higher than those for gas, and each electric light supplants fifteen gas-burners."

Five of the metropolitan gas companies have met within the last few days, and, as will be seen, they seem to regard the threatened rivalry of the new light with comparative equanimity. At the meeting of the London Gaslight Company, the chairman (Major Hawkins) said:—

The electric light can only be produced by means of an engine, and he believed if it came to be used in places where people could afford to pay for it they would find that gas would be the material used to produce the electric light, so that he had not the faintest doubt that so far from the future of the company being injured it would rather be improved, for he believed that the electric light would enable them to use their gas in a new field altogether.

Mr. Leng, of Dundee, speaking at the same meeting, said,—

He had seen the electric light used, and had read all the books, articles, and pamphlets upon it, and the conclusion he had arrived at was that it would be one of the lights of the future, but not to the exclusion or superseding of gas-light. He was satisfied that for public squares, for some kinds of public buildings and entertainments, and for special illuminations, the electric light might already be regarded as a scientific, though perhaps not an economical, success. The intense brightness of the light, the want of radiation, and the depth of shadows, were objections to its adoption for domestic purposes. He then alluded to the little effect that the lighting of the whole of the public lamps by electricity would have on the gross revenue of the gas companies, which in his opinion would affect the net profits and dividends very imperceptibly.

Mr. Rawlinson, C.B., a director of the company, said he fully agreed with Mr. Leng,—

He was firmly convinced that the electric light could not come into use for domestic purposes, and that the use of gas for engines and other purposes was likely to largely increase. He was of opinion that gas shares were a safe and profitable investment, and he advised the shareholders not to be frightened into sacrificing their property.

At the meeting of the Phœnix Gas Company, the chairman, Mr. E. Horner, said,—

He was of opinion that the use of gas could be largely extended, and with great economy, in generating motive power for engines, and another fact was that that class of engine could be worked without any increase on the insurance premium. With respect to the electric light, everything resolved itself into the question of cost. . . . . At the Avenue de l'Opéra at Paris the cost for gas was 885*l.* a year, and that of the electric light amounted to 10,625*l.* He thought that very few of the London vestries would care about spending ten times as much for the purpose of having the electric light as they were now paying for gas, and even if this company lost the whole of the public lighting it would make but very little difference to them, as 1d. per 1,000 cubic feet would cover the loss.

Mr. R. Bradshaw, presiding at the meeting of the Commercial Gas Company, said that,—

The directors had every confidence that, notwithstanding the proposed introduction of the electric light, they would be able to meet the shareholders every half-year for many years to come with as favourable reports as had that day been presented.

The prevailing view at the meeting of the Surrey Consumers' Gas Company was that the new light, while of acknowledged utility for lighting open spaces, would never supersede gas for household and domestic purposes, both on account of the inconvenience attending its introduction, and because of the extra expense. One speaker (Mr. Pocock) spoke very hopefully of the prospects of a greatly extended use of gas for cooking.

Mr. George Livesey, C.E., the secretary and engineer of the South Metropolitan Gaslight Company, in answer to questions put to him at the meeting of that company, said,—

He did not think that they need be afraid of the electric light, though he considered that if it could be produced cheaper, and improved, it might be used for large and central spaces in the city of London, which at present were badly lighted. . . . . It had been stated that the loss of the public lighting would only decrease the income of the gas companies one per cent. This was a mistake. It would amount to from 7 to 10 per cent. of the total income from gas. . . . This was assuming that the electric light could be used for all public streets. He, however, maintained that it would not be a fit light for that purpose, as they did not want a concentrated, but a diffused light. The electric light could not be diffused, and all they would have with it would be brilliant centres of light at long intervals, and the difficulty they had to contend with was that the intensity of the light could not be diminished. He therefore maintained that the electric light was totally unsuited for ordinary lighting, for so great was its intensity that it must be screened so as to destroy 95 per cent. of the light it gave.

Professor Barrett, lecturing at Birmingham on Monday evening, announced that Mr. Edison had solved the problem of the subdivision of the electric light indefinitely.

The announcement has had a considerable effect in depressing the share market.

DRURY LANE THEATRE.

Under the title "The Coming Season at Drury Lane Theatre," Mr. Charles Lamb Kenney has published a pleasant pamphlet in the interest of Mr. F. B. Chatterton, who commences his thirteenth season with a revival of Shakspeare's "Winter's Tale." A long and serious illness has kept Mr. Kenney out of the sight of the public for some time, and many will feel pleasure in again seeing him in black and white. He puts forward a strong claim for Mr. Chatterton as having "made more sacrifices of time, toil, and treasure, in the cause of the more elevated form of dramatic writing, than any living manager, and many dead." Whether these endeavours have been made with wisdom he does not say, and we will not stop to discuss. We are glad to find Mr. Kenney in the list of those who feel that some interference is necessary to maintain a home for the poetical drama.* "What a complement" says he, "and crowning of our latter-day strivings for the more solid education and broader enlightenment of the coming generations would have been such an establishment as a national theatre, subsidised by the State, to hold up, against all vicissitudes of fortune, the grandest models of the grandest and most difficult, yet most impressive, of all forms of poetical creation,—the Drama! But, as things are, and, alas! are likely to continue, the manager of a great metropolitan theatre is but the head of a great commercial enterprise. Whatever be his aspirations, he must watch the turn of the market, which, in theatrical matters, means the tide of public fashion, and this, be it mean, frivolous, and unworthy, or all the reverse, must be keenly followed and implicitly obeyed, else will disaster and deficit for a certainty ensue."

As regards Mr. Chatterton's efforts, the *Times* correctly points out that the "present production is not more a revival of a play by Shakspeare than a revival of a pageant by Mr. Chas. Kean." The revival, however, of the pageant is not to be compared with what was done at the Princess's any more than the acting can be. Even the chronological congruity aimed at by C. Kean has been dropped. While adopting the Temple of Syracuse as the locality of the trial, Mr. Beverly, admirable artist as he is, has managed even to make the architecture of the Temple unmistakably Roman instead of Greek. As regards the acting, it was in parts on the first night terribly bad. It was the pleasure and privilege of the conductor of this journal to take considerable part in the production of the "Winter's Tale" at the Princess's, and we could say much on the subject, but it would require more space than we can just now afford. We give Mr. Chatterton praise, notwithstanding some previous observations, for good intentions, and, indeed, good endeavours to produce a satisfactory result, and we earnestly trust the public will fully support him in the course he has entered upon.

ALLHALLOWS CHURCH, TOTTENHAM.

Sir,—With reference to your correspondent "Cyclops's" letter in your journal of the 7th of September respecting Allhallows Church, a local contemporary of yours refers to it as under.

Lynx Eye.

"A correspondent who has sent us the above says he would also feel obliged by some information on the subjects mentioned. He also wants to know what has become of the window which used to be in the western wall, the design for which was prepared by a resident of Tottenham. The inhabitants of the town subscribed its cost, and he, therefore, thinks it right that they should know what has become of their property. What, too, has become of the old font which has stood for centuries in the church, and what has become of the pulpit which the present Lord Mayor placed in the church at his own charge? Yet another question: Who is responsible for the hall-paper-like appearance of the west wall, which has given the dear old building a more patchwork appearance than ever? Whoever it was, the adornment does no credit to his taste."

TESTING LIGHTNING CONDUCTORS.

Sir,—In reply to your correspondent who wishes to know where he can obtain the testing of his lightning conductor, I can, after a somewhat extensive experience, well recommend him to Messrs. A. Proctor & Co., of Turnagain-lane, Farringdon-street, who have fixed conductors for me in a satisfactory manner, and who also make special arrangements for testing their conductors at stated periods, and ensuring conductivity. Charles Bell, Architect.

*** Another correspondent recommends Messrs. J. W. Gray & Son, of Limehouse.

* The desirability of obtaining a national theatre will be discussed in the Art Section at the approaching Cheltenham Congress of the Social Science Association.

EXHIBITION OF SANITARY APPLIANCES.

An exhibition of sanitary appliances was held last week in Stafford, in connexion with the Congress of the Sanitary Institute of Great Britain. At a meeting held on Saturday evening, Dr. Lory Marsh read the list of awards made by the judges. They recommended that medals be given to (among others) the following exhibitors:—

Messrs. Billing & Co., apparatus for cooking by gas; S. Leoni & Co., apparatus for cooking by gas; the Liverpool Silicate Paint Company, for "Griffith's zinc white paint," "silicate paint," and "petrifying liquid"; Doulton & Co., stoneware sanitary pipes and joints; Moule's Patent Earth-Closet Company, for their earth-closets; the Sanitary Appliance Company, Salford, for patent portable cinder-shifting ash-closet; Hassall & Singleton, Phœnix portable range and Birmingham range.

The judges further recommended that certificates of merit should be awarded to the undermentioned exhibitors:—

J. Stiff & Sons, for patent ventilating trap; Potts & Co., patent Edinburgh air-chambered sewer gas trap; Rufford & Co., porcelain baths; G. H. Harris, economical cooking range; S. Leoni & Co., for "the Rheometer"; T. Larmuth, for patent dual desk; Coleman & Glendinning, for school desks; Gillon & Co., patent lavatory; J. Shone, pneumatic liquid ejector; Oates & Green, for patent drain-cleaning rods, sanitary pipes, &c.; the Ladies' Sanitary Association, for various publications; H. Snell, for patent thermhydric ventilating hot-water open fire-grate; G. Bridgett, for warming and ventilating apparatus; Thorne & Co., patent artificial stone filters for cleansing domestic water; B. B. Haresceugh & Co., excreta receptacle, with patent spring lid; and D. T. Bostel, patent excelsior water-closet.

THE OBELISK.

At a meeting of the Metropolitan Board of Works on the 4th inst., the Works and General Purposes Committee submitted the following report:—

"The attention of your committee having been directed to the question of the preservation of the surface of Cleopatra's Needle, they directed the engineer and the consulting chemist of the Board to report to them on the subject. Those officers have accordingly considered the question, and have presented a joint report, which your committee submit for the information of the Board, and in which they recommend that trial be made of the material known as 'stone solution' upon the obelisk so soon as may be convenient, in order that they may have the opportunity of judging of its effect, and may be enabled to report their opinion of the result of such trial. Your committee concur in this suggestion, and recommend accordingly."

Mr. Runtz, in moving the adoption of this recommendation, said that the committee had taken the advice of the Board's consulting chemist (Mr. Keates) and the engineer (Sir Joseph Bazalgette) on the subject, and now recommended that the Board should try this solution, which they were advised would effectually fill up all the interstices, and render the stone perfectly impervious to either frost or moisture, and at the same time not injure or deface the surface of the monolith.

Mr. Leslie opposed the motion, as he objected altogether "to Cleopatra's Needle being turned into an advertising station for a limited liability company." In the first place, he understood that this was a patent solution, and he contended that the Board ought to be informed of what it was composed. He had been told that this liquid had been tried at the Houses of Parliament and had utterly failed.* He appealed to the Board to pause before committing this act of barbarism in regard to an ancient monument. He moved an amendment to the effect that the further consideration of the report should be adjourned, and that the subject should be referred back to the committee for them to furnish the Board with further particulars as to the solution.

Dr. Brewer seconded the amendment, inasmuch as he thought it was possible that the solution might do more harm than good.

In the discussion which followed,

Mr. Richardson, in support of the motion, said that according to the report presented by Mr. Keates and Sir Joseph Bazalgette, the obelisk had already been materially injured by atmospheric changes, and if nothing was done decay would go on at a very much increased rate. The solution recommended to be used was almost colourless, and would render the surface of the stone perfectly waterproof.

Mr. F. H. Fowler suggested that inquiries should be made as to the means taken to preserve the Luxor Obelisk,† and the obelisks in Rome.

The question arose whether the Board had the power, until the obelisk had been handed over to its custody, to take any such steps as were recommended by the Committee, and ultimately Mr. Leslie's amendment was very properly in substance adopted.

We may add that the scaffolding and machinery used in placing the obelisk *in situ* have now been removed.

The following inscriptions for the four sides of the pedestal have been submitted to the Metropolitan Board of Works, whose approval has yet to be given to them:—

THIS OBELISK
WAS QUARRIED AT SYENE AND ERECTED ON HELIOPOLIS
BY THOTHMES III., ABOUT 1500 B.C.
FURTHER INSCRIPTIONS WERE ADDED TWO CENTURIES LATER
BY RAMESES II. (SESOSTRIS I.).
REMOVED TO ALEXANDRIA, THE ROYAL CITY OF CLEOPATRA,
IT WAS ERECTED THERE IN THE SEVENTH YEAR
OF AUGUSTUS CÆSAR, B.C. 23;
TRANSPORTED TO ENGLAND AND ERECTED ON THIS SPOT
IN THE FORTY-SECOND YEAR OF
QUEEN VICTORIA,
BY ERASMUS WILSON, F.R.S. AND JOHN DIXON, C.E.

THIS OBELISK
HAVING FALLEN PROSTRATE ON THE SANDS AT ALEXANDRIA,
WAS, IN GRATEFUL REMEMBRANCE
OF NELSON AND ABERCROMBY,
PRESENTED TO THE BRITISH NATION A.D. 1819,
BY MOHAMMED ALI, VICEROY OF EGYPT.

ENCASED IN AN IRON CYLINDER, IT WAS ROLLED INTO THE SEA,
AUGUST 29, 1877.
ABANDONED IN A STORM IN THE BAY OF BISCAY,
IT WAS RECOVERED AND TOWED INTO FERROL HARBOUR,
WHENCE, IN CHARGE OF CAPTAIN CARTER, IT REACHED
THE THAMES,
JANUARY 20, 1878.

THE WORK WAS FURTHER AIDED BY
H. H. ISMAEL PACHA, VICEROY OF EGYPT.
GEN. SIR J. E. ALEXANDER — JOHN FOWLER, C.E.
HON. C. H. VIVIAN — BENJAMIN BAKER, C.E.
GIOVANNI DEMETRIO — GEO. STEPHENSON, C.E.
CHARLES SWINBURNE — WAYNMAN DIXON, C.E.
S. BIRCH, LL.D.

WILLIAM SMITH — MICHAEL BURNS
JOHN GARDINER — WILLIAM DONALD
JOSEPH BENBOW — WILLIAN PATAN
PERISHED IN A BRAVE ATTEMPT TO SUCCOUR THE CREW
OF THE OBELISK SHIP "CLEOPATRA" DURING THE
STORM,
OCTOBER 14, 1877.

STATE OF THE THAMES.

Evidence accumulates on every side to establish the correctness of the statements we have felt ourselves compelled to make. As amongst the most recent, we must mention that at the ordinary meeting of the Metropolitan Board of Works, to be held this (Friday) October 11th, a letter from the Town Clerk of the City of London will be read, stating that the attention of the Port of London Sanitary Committee has been called, by their medical officer of health, to the foul state of the water in the Thames near Beckton, and intimating that it is desirable that some means should be adopted to remedy the present evils consequent upon the state of the water near the sewage outfall.

SEWAGE IN THE THAMES.

A discussion took place on the 3rd inst. at a meeting of the Plumstead District Board of Works relative to the influence upon the River Thames of the London sewage discharged from the outfalls contiguous to the Plumstead boundary.

Mr. G. Whale, who introduced the subject, said he was glad to see that the Metropolitan Board had ordered an inquiry, and drew attention to another outfall from which the drainage from North Woolwich flowed directly into the river.

Mr. Lloyd (Metropolitan Board) said that although the Board's engineer had been ordered to report, no reasonable person would give credence to the assertions which had been made that the persons drowned in the wreck of the *Princess Alice* had been poisoned by the sewage from the outfalls. The sewage was discharged after high water, and it could no more come back against the outpour of the Thames and its tributaries than it could penetrate a wall of granite (!). Instead of being a seething mass of corruption, as it had been described, the sewage as it entered the Thames merely resembled dirty water, and if any remained in the Reach next day it was immeasurably diluted. He hoped that people would remember the state of the Thames when the Metropolitan Board took it in hand, before they complained of the remedy; and, after testifying to the comparative purity of the water at London Bridge, he said that the refuse from vessels going up and down the river, and the discharges from the docks, would account for its pollution at Greenwich and Woolwich.

Mr. T. Moon, who was formerly shipping-master at Woolwich, said he had seen the water come back on the flood-tide black with sewage, and a great portion of the discharge from the northern outfall never got away, there being an eddy tide, which carried it up instead of down the river. The floating powder-magazine used to lie on the north side of the channel; but the accumulation from the outfall was so great that the vessel had to be removed to the south shore.

Mr. Hughes said the outfall at North Woolwich had been made by the Metropolitan Board in direct violation of their Act of Parliament. He had seen sewer-mud 7 ft. deep on the shore below the southern outfall.

Mr. Kimber said that Mr. W. P. Jackson, who was for many years chairman of the Steamboat Company, and was now a member of the Thames Conservancy and Metropolitan Board, had testified that the sewage floated up and down with the tide.

Mr. Kimber gave notice of motion on the subject.

MASTERS AND MEN.

Aberdeen.—More than a month ago the master carpenters in Aberdeen gave notice that on the 1st of October the wages of their men would be reduced by ½d. per hour (from 7½d. to 7d.), and also that they would not recognise the bye-laws laid down by the men. Some months ago the men resisted these proposals, and neither party yielding, about 460 of the men came out on strike on the 1st inst. A meeting of the men was held in Lockhart & Salmond's hall in the forenoon, over 415 being present. Circulars were received from about a dozen of the masters, offering to continue the men at the old terms, and the men in the employment of those masters, to the number of about fifty, went back to their work. The others remained on strike. On the 4th inst. intimation was given to the ship-carpenters at Aberdeen that on and after the 17th inst. their wages would be reduced from 7½d. to 7d. per hour.

Carlisle.—About fifty operatives stone-masons in the employment of Messrs C. & J. Armstrong, Carlisle, have struck work, in consequence of the refusal of the masters to agree to the new rules of the society.

Glasgow.—The Glasgow plasterers' strike has just terminated, after lasting four months, by the operatives accepting the employers' terms of 9d. an hour,—or 1d. reduction.

Birmingham.—Messrs. Chance Bros., Spon-lane Glass Works, Oldbury, have given notice to their workmen of a general reduction in wages. In some of the branches the proposed reduction is equal to about 40 per cent. The men appear determined to resist, and a strike is expected. The firm allege that the crisis is due to bad trade, and that if the men do not accept their proposal the works must be closed, as they are working at the present time at considerable loss.

North Shields.—The operative joiners of North Shields have unanimously resolved to close the strike by accepting the masters' terms of 8d. per hour. The strike lasted twenty-six weeks, and more than 200*l.* have been paid from the society's funds to the men while out.

Northwich.—It is stated that the master shipbuilders of Northwich have accepted the terms suggested by the carpenters in the letter which they sent in reply to the note received from the masters in July last. Having regard to the present depressed state of trade, the men consented to a reduction of 2s. per week in wages during the ensuing winter,—say six weeks before and six weeks after Christmas,—but they would not accede to any alteration that would increase the hours of labour.

Bridgwater.—At a special meeting of the corporation of Bridgwater, on the 27th ult., the corporate seal was affixed to a contract with Mr. Charles Chamberlain, builder, of Anstey, near Leicester, amounting to 9,425*l.* 10s. 3d., for the erection of engine-house, filtering-beds, &c., in connexion with the water-supply; and bills amounting in the aggregate to more than 1,300*l.* were ordered to be paid other contractors for works connected therewith.

* We believe we are correct in stating that the solution in question has not been used at the Houses of Parliament.

† This obelisk was covered, at the time of its erection in Paris, with a concentrated solution of caoutchouc, the quantity used being eighty-four quarts.

THE SMOKE NUISANCE.

Sir,—Excuse the intrusion of a stranger who has no other means of reaching your acquaintance, and who desires your opinion in reference to the abatement of the chimney-smoke nuisance of your metropolis.

I have my system in use here, but for another purpose, and can recommend it. The contrivance is used here to economise fuel by consuming all combustible matter in the fuel, so that no sparks escape. No soot accumulates, and there is no danger of chimneys taking fire, as the soot is already burnt to dust.

There would need to be a change in the position of the grate as used when I lived in London, so that it would allow a 10-in. cylinder to fit over it, and to carry off the ventilation to the chimney by a pipe that would be pierced into it. This cylinder is of Russian sheet iron, very neat, 10 in. by 28 in., and economises fully one-third fuel, giving out a greater heat to the room. The smoke is consumed in this cylinder, where a briskish fire is kept up, and the arrangements in it are not expensive. The whole work may be done for a guinea a chimney. Where new houses are built, or new grates being fitted into old ones, the cost would be less. This price would be more than saved in fuel in course of a season, whilst the apartments would be better heated. Could you put me in communication with some party who could turn the invention to some account for our mutual good?

Walter Carswell.

Green Bay, Wisconsin, U.S.

ABUSE OF THE GREEN PARK.

Sir,—It seems high time some public notice was taken of the deplorable treatment to which the Green Park is being subjected. Though one of the smallest of our inter-London parks, it was, perhaps, the prettiest. Its character and beauty mainly consisted in its almost uninterrupted slope of green from Hyde Park-corner to the mansions in the Queen's-walk on the far side, bounded on either hand by the beautiful fringe of trees along Constitution Hill and Piccadilly. There were but few paths, and those the most necessary ones from certain points where well-defined streams of traffic took their way; so that there was little to break a pleasant ramble all over the park in any direction, and in summer-time it was a most cheering sight,—always remembering that we are in London,—to see the troops of children disporting themselves in unrestrained enjoyment, kite-flying being one of the principal amusements. The number of more elderly persons who seemed to make a promenade over the grass was not less remarkable, and this, not simply as passing through the park, but pacing it backwards and forwards, evidently with a sense of pleasure and enjoyment.

Now all is to be changed. For some time past operations have been going on of which in their progress it was difficult to tell the precise nature and design, but these are now disastrously made plain. What has been done is this. The old existing paths have been widened to a wholly unnecessary extent by chopping away the grass on either side, and wherever these paths intersect, great wastes of gravel have been made by a further and extensive chopping away of the turf all round, so as to leave a formal and cheerless space, where seats are placed; the effect being dreary and depressing in the extreme. Indeed, to get rid of as much of the grass as possible seems to have been one main object. But this is by no means the worst of these "improvements." Fresh paths have been cut in various and uncalled-for directions, as unnecessarily wide as those already referred to, and precisely doing that which destroys the charm of the place by breaking up its continuity of greenness. The extent to which this has been done in some parts can only be believed by being seen; but it is a fact that the intersecting of all these paths, old and new, slices the park in places into an array of patches most uninviting to behold. The climax, however, is a wide path which has been driven from end to end, right up the hitherto undivided greensward which formed *the* promenade and playground of the park. To make matters worse and emphasise the evil, it seems to be intended to partition off the greensward from the paths by dwarf iron railings, which will make a continuous walk or game impossible, and, moreover, be in themselves very dangerous in the dusk, the park not closing till ten.

The only apparent plea for these doings is, that the public work paths for themselves across the grass, thus in effect cutting up the park; and that these new paths have mainly taken the directions thus indicated. But proper management could easily divert this no doubt pernicious habit of making a "track" of a "short cut," without permanently disfiguring the park and marring the enjoyment of those frequenting it.

The abolition of the new paths and the restoration of the open space of the park to its primitive uninterrupted slope of green is what must be insisted on. The Office of Works is to be as little complimented upon the inspiration which has led to these inroads as upon the doing away with more than half the length of the flower-beds which used to grace the Piccadilly side of the park with an elegant sweep, and formed a most charming feature. An experiment has been made of flower-beds along the Queen's-walk side. These also have disappeared. But these losses are not to be compared with the evil I have pointed out of so cutting up and fencing in the open green space with broad gravel paths and iron railings, that it will scarcely any longer deserve its beautiful name, "The Green Park." B.

ART "DODGICK."

Sir,—A man whose rational faculty has been cultivated, and not at the expense of his taste, cannot help being irritated at the frequent substitution, in dissertations upon art, of illogical tirade for rational argument. You cannot "have" such writers anywhere. They have no form nor substance of rationality to lay hold of. They place contradictory statements side by side in perfectly irrational innocence, and they glide from one position to its contradictory with such easy content and satisfaction that there is no bringing an argument to an issue. They do not perceive the antagonism of their various statements. Let me illustrate with a few examples:—

Here, for instance, are several statements from the letters of an advocate for the conservation of English art work, which, though intended to frighten, clearly show, from their own internal evidence, that the English in the aggregate are doing precisely what he would desire, save and except in the one particular of delivering over their art-treasure to a public institution. But I will place the contradictory passages side by side without further comment:—

"There is now danger that any day foreign appreciation may suddenly trench upon it."

"As yet, however, monuments of art, other than pictures of English origin, have not as a rule been coveted by foreign collectors, but any day the fashion might suddenly arise in Continental art circles."

"The tide now ebbs away from this country, and every day float with it to neighbouring shores the most precious and costly treasures of art."

"Our French allies were, I believe, before us on the occasion, but the specimens are, one by one, finding their way back to London."

Then, Sir, I come to one of your correspondent's letters, in which, in an argument against "shams," he asks the very pertinent question, "Are we not endowed with intellect and understanding to discover for ourselves that things are not what they seem?" He then answers it, as I have answered it, "Hence there is no deception." Just so! There is no moral delinquency where the intent is not to deceive. In those few words he upsets all his previous argument, and accepts my views.

Again, I come upon an article upon "The Artist and his Work," evidently written by one who wishes well to art, and therein I find the following passages:—

"It is the genius of the hour which always sets his ineffaceable seal upon the work, and gives to it an inexpressible charm for the imagination."

"Ephemeral works produced for the gratification of the passing hour cannot be placed upon a footing with those which are the most precious gifts to posterity."

The truth being, that the work which is lasting is not that which is founded upon the accidents and whims of the hour, but upon those eternal principles which remain fixed amidst the flux of accident. And then we have a grandiose and inflated sentiment attributed to Ruskin,—one of those airy nothings which are so frequently bandied about in discussions upon art. "The man who loves nature most will always be found to have most faith in God, because Nature is the visible manifestation of Him in whom we live, move, and have our being." Does the malefactor "live, move, and have his being in Him"?—ugliness as well as beauty?—vice as well as virtue? See, then,—for these are the visible manifestations of Nature,—to what conclusions we must come, if we were to accept the dictum that all Nature is but the visible manifestation of God. You will, I think, Mr. Editor, perceive, after what I have written, that we must in future avoid "Dodgick," and exhibit more common sense. I do not imagine that I am free from the fault I am condemning, but I am at least *striving* to be more logical upon art questions. Meter.

THE "STEAM NAVVY."

Sir,—In the *Builder* of the 28th ult. you gave an account of the "Steam Navvy," and the work of excavation which it turns out, with all recent improvements. The performances noted are neither new nor surprising. The machine was originally called in America, many years since, the "Steam Irishman," and has been much used on the other side of the water. In 1854 I was on a visit to the Falls of Niagara, and saw a rude model of the mechanical earth-excavator at work in a railway cutting, and I was informed by a shrewd Yankee who was in charge of it that it was a "ripper at its work, never struck for wages, and never had fever or ague." At that time I was engaged upon some heavy earthworks on the Grand Trunk Railway of Canada, near Toronto, on the northern shore of Lake Ontario, where the swamps in the vicinity of the large cuttings produced ague to an alarming extent amongst the navvies, and the works became deserted. I took the rough machine in hand, strengthened its weak parts, and four were made and put at work in the years 1854-5-6. We were anxious more to save time and interest upon capital expended than to reduce the cost price of excavation per cubic yard. The steam excavator worked day and night all through the summer months, say at least eighteen hours out of the twenty-four each day, and generally there was a greater amount of work done at the night than during the day shift. The earthwork frequently reached 1,200 cubic yards for the day and night, and the turn-out was about 26,000 cubic yards per month, after all delays from weather and accident. The cost, including the getting, filling, leading, and tipping the material, was about 1s. 2d. per cubic yard, and the lead would amount generally to two or three miles. Where the cutting was heavy and deep, two machines would be placed at one end of a cutting, the one above the other, with leading roads from each, at the different levels. The great difficulty was to lead the material away fast enough, as the excavator could tear away from the face of the cutting a cubic yard per minute, and that in stiff clays. In order to effect this rapid delivery with a three miles lead, there was a small locomotive, and about eighty wagons, holding one cubic yard and a quarter each, to each excavator. The wagons were "side tips," and discharged or tipped at the bankhead on a portable turn-table, which swung the wagons round from the down to the up-road, the man on the wagon tipping it over in its transit. No horse-tipping and bumping of wagons was permitted, as so much of the work was done by night. When these machines were introduced to a district, the effect upon wages was apparent, and 12½ per cent. was the inevitable reduction.

Instead of the performance being, as you state, 248 cubic yards per diem for the modern excavator, the result with us and with proper machines and management, should be nearer 600 cubic yards in the same time. While I write this I have before me a drawing of the mechanical excavator which we used on the Grand Trunk Railway, in Western Canada, in the years 1854, 1855, and 1856, and in form it closely resembles the machine you describe, only that a wrought-iron jib has been substituted for a wooden one, and one or two other minor changes. Where, then, the reason, for a patent? and especially so, considering that the modern machine is anything but an efficient one, so far as results go. I may mention that

in Canada the excavator took out a gullet of earth in advance of the general cutting, 45 ft. wide and 20 ft. deep, and the slopes were thrown down afterwards by hand, and trimmed off. The cost of each machine was about 1,200*l.*

V. Wyatt.

Beckton, North Woolwich.

LYME REGIS, DORSET.

Sir,—Over two years have elapsed since you were asked by a subscriber of your paper to insert a few remarks on the general condition of Lyme Regis, and although it was replied to in a contemporary, the *Sanitary Record*, of September 12th, 1876, the remarks of "Sols" met with the approval of the principal part of the inhabitants as facts; but I am sorry to say that in many instances the same state of affairs (as mentioned) is still existing. Certainly the commissioners have made an attempt at a little improvement, by the laying down of several yards of main-drain pipes in a few places; but if the pipes of the closets are connected to the main in one instance, it only tends to assist the pollution of the river, as its outfall leads into it.

Another good improvement has been made by the laying down of new main to better facilitate the supply of water (which is abundant), the corporate body having bought off the rights from the old company; but even this has not done away with the resort to the river by the inhabitants for water. In all other instances, however, the town is in about the same condition as mentioned in your valuable medium of August 5th, 1876, and if you would kindly insert this, so as to assist to arouse the powers that be *locally*, and the public in general, from their inactivity, I feel assured you would be doing a general good to the town, and, at the same time, you would oblige An Inhabitant.

THE "ARCHIMEDEAN" SCREW VENTILATOR.

Sir,—Messrs. Ewart & Son, at p. 1024, come out pretty strongly anent the great power the "Archimedean" screw ventilator has in increasing the up-current. Now, as "the proof o' the puddin' s the preeing o'ot," I beg leave to publish the following experiments made at a large wholesale stationery and publishing establishment in Glasgow (Messrs. W. Collins & Co.'s), where a number of Howorth's "Archimedeans" are erected.

There are two large ventilating-shafts, 2 ft. 6 in. in diameter, and about 20 ft. high, and say 20 ft. distant, and in the same hall. One has no ventilator upon it, but is left quite open to the wind and rain, while the other is surmounted by a large Howorth's "Archimedean." The following was the amount of up-current, in feet per minute, which each showed:—

Plain Pipe.	Howorth's Archimedean.
360	300
430	250
400	280

When the "Archimedean" was stopped from revolving, the up-current still went on at the rate of 170 ft. a minute; and even when turning the wrong way, the up-current continued but at a still further reduced rate. Another "Archimedean" gave 140 ft. up when moving, and 90 ft. when standing, while a very large one scarcely moved at all, and allowed repeated down-draughts, even with the windows partly open to allow plenty of air in.

I observe that Messrs. Ewart & Son also affirm that the "Archimedean" is more powerful, steadier, and more constant in action than Mr. Banner's cowl. Now, I doubt that very much, and feel inclined to back up Mr. Banner's cowl against the "Archimedean" ventilator in the proposed new contest.

W. P. Buchan.

TRAMWAY SLEEPERS.

Sir,—In reference to the letter of "G. W. B.," in your issue of the 5th inst., some of the tramways in this district (Chester) are laid on fireclay blocks or sleepers, with holes in them, which are filled with wood to drive the spikes into.

The blocks can be and are made any shape or size, and almost as hard as granite. Would the use of them not obviate the "grievous evil" complained of? John M. Gibson.

FIRE-RESISTING CEILINGS.

Sir,—In the *Builder* of September 28, is an article on "Fire-Resisting Ceilings," in which it is stated that,—"Messrs. Leigh & Sons have patented a simple mode of producing a fire-resisting ceiling. By substituting hoop iron, suitably prepared, for ordinary wood laths, and coating with good plaster, a ceiling can be made through which it is next to impossible for fire to penetrate."

I beg to state that twenty years ago I introduced this matter to the public, and applied the hoop-iron as laths, not alone to ceilings, but also to studded partitions and battened walls, which in dwelling-houses at least are of as much importance to be fireproof as ceilings.

I published a pamphlet at that time on "Fire-proof Building," in which this method of hoop-iron laths was pointed out, and thought the matter of some public importance, but not such as to have it patented.

I hope Messrs. Leigh & Sons will succeed in getting it adopted, and cannot but say the priority of invention was with me.

John Boyd, Architect.

BRIDGE OVER THE THAMES.

Sir,—If "bright mental stars" are to "ascend to the empyrean of human intellect," it will not be by "safely reckoning" after the fashion of your correspondent "C. G." If traction on a smooth, straight road be taken at 30 lb. to the ton, which is probably an unduly low estimate, it is, of course, equal to 86 lb. to the ton on a rise of 1 in 40. But for estimating an additional 20 lb., to overcome the slight inconvenience of a spiral curve, "C. G." fails to give any ground. Having a strong opinion against the proposed high-level bridge, I regret to see arguments brought against it that will not hold water. Will "C. G." be kind enough to give us his grounds for this "safe reckoning"? At the same time perhaps he will explain what he means by "the multiplied force of three and a half," which, I confess, baffles a plain student of Cocker.

WHO'S TO PAY THE CLERK OF WORKS?

Some members of the Hove School Board appear to have curious notions as to the relationship between clerks of works and architects. At the meeting of the Board on the 27th ult. a letter was read from Mr. Thomas Simpson (joint architect, with Mr. F. W. Roper, of the new schools in Ellen-street), stating that the employment of a clerk of the works, at the Ellen-street schools, was indispensable to the proper carrying out of the works, and recommending Mr. Ayres for the post, at a salary of 3*l.* per week.

Col. Hansard inquired if it were the custom for a Board to provide the clerk of the works.

The Chairman said he understood that the agreement between the architect and the Board provided that the architect should superintend the works.

The Clerk read the 9th clause of the agreement, which was as follows:—"The architect whose design shall be approved, and who shall be engaged to carry out the works, shall receive five per cent. commission on the gross cost of the buildings, which sum shall include all expenses of plans and superintendence of works," &c.

Col. Hansard said it appeared to be quite clear that the architect should superintend the work himself.

The Chairman said he had made inquiries in Brighton respecting the matter, and he found that it was the custom of School Boards to provide their own clerks of works, and Mr. Simpson could not possibly undertake to provide a clerk of the works. He had also made inquiries in another parish in the neighbourhood, where the Board were erecting two schools, and there the clerk of the works was provided by the Board.

Mr. Gladstone said he also had obtained information on the subject, and it appeared the clerk was the servant of the Board, and not of the architect, but he was under the superintendence of the architect. It was a practice, as far as he could ascertain, that was universally adopted.

The Rev. Mr. Kelly then moved a resolution to the effect that Mr. Ayres be appointed clerk of the works at Ellen-street Schools, at a salary of 3*l.* per week. The works would, he said, certainly require some supervision, and, although the appointment appeared to be expensive, it would really be a saving to the Board, because they would know that the work would be thoroughly well carried out under his supervision.

Mr. Gladstone seconded the motion, believing that it was the common practice in carrying out works of the kind.

Mr. Field moved an amendment negativing the resolution. He said he had no fault to find with the architect, and he understood it was the custom for a Board to appoint a clerk of works, but evidently there had been some mistake in this particular case. The 9th clause of the agreement plainly told them that the architect should superintend the work. He could not see, in the face of that clause, how they could set up another officer over Mr. Simpson. If anything were done wrong they would naturally blame Mr. Simpson, but he would turn round and deny the responsibility. Mr. Simpson accepted 5 per cent., for that and other work, on the gross cost, which was 7,584*l.*, and his commission would therefore amount to 419*l.* Beyond that, he happened to know that Mr. Simpson got 2½ per cent. for getting out the contractor's quantities, which would bring his commission up to 620*l.* 10s. He thought Mr. Simpson could well afford to pay a clerk of the works out of that sum. The 2½ per cent. paid by the contractor practically came out of the funds of the Board, because the builder covered the expense by increasing the contract by that sum.

The Rev. Mr. Kelly said it seemed to him that the superintendence of the work meant the superintendence of the clerk of the works, as well as the builders and the foremen engaged upon the work. At the same time, this would be a warning for them to be more explicit in the future with their agreements, and to have them more clearly defined.

Col. Hansard said they had erred through ignorance, and it was a pity they did not take some advice on the subject at the outset.

The Clerk explained that Mr. Simpson took out the quantities because it would save the Board a great deal of money. When professional architects, whose sole business it was to get out quantities, were employed, the contracts were generally made as high as possible, in order to increase the commission.

Mr. Field replied, saying that any other architect would have had only one per cent. commission.

A vote was then taken, when all the members voted for the resolution, except Mr. Field.

The above report is extracted from a Brighton paper, and our readers will agree with us (and with Col. Hansard) that some members of the Board have "erred through ignorance,"—of the fact that the salary of a clerk of works is invariably paid by the building-owner.

ALLEGED CONSPIRACY BY WORKMEN.

FRAUDULENT TIME-SHEETS.

At the Lambeth Police Court, on Saturday last, William Baldry (35), Frederick Knight (32), carpenters, and Richard Williamson (33), foreman, were charged on remand with conspiring together to obtain certain sums of money.

All the prisoners were in the employ of Mr. B. E. Nightingale, builder, of Albert Works, Lambeth. The firm had some extensive alterations to carry out at Messrs. Atkinson's, Westminster-road. On the 27th of September, Mr. Headland, manager to prosecutor, found the names of Baldry and Knight on the time-sheet as having worked there 60½ hours. This sheet was signed by Williamson, whose duty it was to make out such sheet and send it in to the office. Baldry and Knight brought two pay-tickets. They were then charged with not having worked the time, and were given into custody. It was further shown that Baldry was not at work at Atkinson's all the week, and Knight had only worked seven hours last Saturday week, but was not there all the following week. When Williamson was taken into custody he said he was surprised at being arrested, as the men were at work.

Evidence was now called to the effect that at the time Baldry and Knight were supposed to be at work for prosecutor, they were doing a job at the West End for another employer.

Mr. Chance, the magistrate, decided to send the case for trial, agreeing to accept the personal recognisances of Baldry and Knight to appear at the Sessions. He refused bail for Williamson.

"KEEPING A DAY'S PAY IN HAND."

BAKER *v.* TAYLOR.

This case was heard in the Lambeth County Court last week, before Mr. J. Pitt Taylor. It was a "test action," brought by a builder's labourer, to recover from the defendant, a master builder, of Brixton-road, the sum of 4s. 1d., being one day's wages, which the plaintiff alleged had been wrongfully detained from him.

Mr. Orfeur, clerk to the defendant, said his employer had contested this claim on principle, and without reference to the paltry amount involved. The facts were that it was a rule of the firm to keep a day's pay in hand from all their *employés*, and the plaintiff having been paid his wages on the Saturday night, but not returning to his employment on the Monday, they (the firm) were put to a deal of trouble and expense in getting another person to fill the plaintiff's place. The defendant therefore thought he was justified in retaining the small amount now claimed by the plaintiff, as some compensation for the loss and annoyance he had been subjected to.

The Judge said the defendant was not entitled to make any such deduction, as the law stood at present. For the defendant's future guidance, he would tell him that he could make any bargain he pleased with a man who entered his service, but for that bargain to be binding the arrangement must be mutual and binding on both sides. He (defendant) could tell the man that if he left him without notice he would have to pay a day's wages, or have the amount deducted from any wages that might be coming to him. If such a bargain were made on both sides, the defendant could,—in a case like the present,—retain the day's pay, or any other sum agreed upon. However, as no such agreement had been made in the present instance, he should give judgment for the plaintiff for the amount claimed.

ARBITRATIONS.

London.—Sir Henry A. Hunt, C.B., the arbitrator in the case of the London Pavilion Music Hall, has sent in his award. M. Loibl claimed 147,000*l.* for the freehold and goodwill, the building being required for the new street from Piccadilly to Oxford-street. The amonnt awarded is 109,300*l.*

Derby.—The claim presented by Mr. Thomas George against the Derby Sanitary Authority in respect of the compulsory sale of his premises in St. Peter's-street for town improvements, was argued on the 24th ult. at the Surveyors' Institute, Great George-street, Westminster, before the umpire and arbitrators, Mr. Edward Ryde, of London; Mr. Richard Bayliss, of Derby; and Mr. Fowler, of Birmingham. The claim was for 20,000*l.* The arbitrators have awarded 13,645*l.*

SURVEYORSHIP ITEMS.

Plymouth.—Mr. H. Alty has been appointed surveyor to the corporation and urban sanitary authority of Plymouth.

Romsey.—The *Hampshire Independent* reports that, at a meeting of the Romsey town council, held on the 3rd inst., it was resolved to appoint a borough surveyor, by eight to seven votes, at 20*l.* per annum. No doubt the councillors will get what they pay for, which is not much.

Old Swindon.—At a meeting of the Old Swindon Local Board of Health, on the 20th ult., the five selected candidates for the surveyorship and inspector of nuisances presented themselves for examination, and Mr. Thomas V. H. Davison, C.E., son of Mr. T. V. Davison, borough surveyor of Windsor, was elected to the post.

DRAWING CLASSES FOR WORKMEN.

Now that the evenings are lengthening, schools of art and drawing-classes for workmen are commencing their winter courses. Every workman who desires to improve his position will do well to avail himself of the advantages offered by these technical classes.

The *Richmond and Twickenham Times* puts in a plea for the drawing and technical classes carried on in that locality, and lays special stress on the importance of the class devoted to "building construction,"—

> "Who does not know the 'dear-at-any-price carpenter,' who cannot correctly work to a plan, and who has no more ability to get out for himself a plan and rod for a set of 'boxing-shutters' than he has to divine the clue to the Etruscan language? He wastes good stuff by cutting it to wrong sizes, and his puny brain-power achieves its greatest performance when he 'sets out' correctly a simple four-panelled door. Making a sash or grasping the elementary mysteries of 'bead and butt' are quite beyond his ken, and when these are wanted off his bench he has to turn in sheer helplessness to a more skilful mechanic, just as a child would to its teacher for its copy."

In this connexion, we notice that Mr. Parton Parry's metropolitan evening classes for the study of geometrical machine, architectural, freehand, model, and perspective drawing are commencing work in various parts of the metropolis. At Hoxton, last week, Mr. Parry commenced a class for teaching the drawing and designing of furniture, which it is expected will be largely attended by cabinetmakers, carvers, &c. Another class under the same direction was opened at the Mission-hall, Sandwich-street, St. Pancras, on Tuesday last. Mr. Buckmaster, of the Science and Art Department, was present, and in the course of his address he remarked that what was wanted in the present day was that work should be made the means of intellectual training and discipline. They wanted the working classes to throw more thought and sentiment into their every-day life. With good-humoured cynicism Mr. Buckmaster went on to say that there was a general anxiety for the welfare of the working classes, which usually reached its climax on the eve of a general election. He was anxious for the interests of the industrial classes; and those interests lay in their developing and making the best use of their own talents.

ACCIDENTS.

Railway Fatality.—A sad accident occurred on the 1st inst., on the Cornwall Railway, about fifteen miles from Plymouth. A new viaduct is being built at Moors Wather, for the Great Western Railway Company. A stone of about 4 tons weight was being lifted by a steam crane travelling on the line, when it caught at the truck, and suddenly slewed, the jerk capsizing the crane and truck. Mr. Gandy Cole, the resident engineer, who was on the truck, jumped off, but was caught and crushed to death under the machinery of the crane. The engine-driver was entangled in the chain, and could not be extricated for three hours. He was terribly scalded by steam from the boiler.

Fall of a Grand Stand.—At the Houghton-le-Spring Races, on the 7th inst., a grand stand, crowded with spectators, gave way. Twenty of the occupants were injured, six of them, it is feared, seriously.

Fall of a Wall in the City.—On the 4th inst. Mr. W. J. Payne, the coroner for the City and Duchy of Lancaster, held an inquiry in the Board-room at St. Bartholomew's Hospital, as to the death of William Thompson, aged thirty years, who was killed by the fall of a wall in the City. From the evidence of George Ayling, and other witnesses, it appeared that the deceased was in the employ of Mr. Goodwin, contractor. The deceased was employed, with several other labourers, in excavating near a wall at the site of the late great fire in Watling-street, belonging to Messrs. Crocker & Son, wholesale drapers, &c. While Thompson was working near a temporary bridge, about three-quarters of a ton of old wall fell on him. He died soon after. The Coroner said he agreed with the remark of the foreman of the jury, "If the wall had been shored up or pulled down the occurrence would not have taken place." Verdict,—"Accidental death."

VARIORUM.

The *Leisure Hour* gives particulars of the artisans' banner, the "Blue Blanket": —"According to Pennicuick, the order of the Blue Blanket was instituted by Pope Urban II. in the twelfth century, and is therefore more ancient than any order of knighthood in Europe. This author tells us that a large number of Scottish mechanics who followed Allan, Lord High Steward of Scotland, and aided him in the recovery of the Holy Sepulchre from the infidels, took with them a banner bearing the inscription 'In bona voluntate tua edificenter muri Jerusalem.' This banner, which they styled the 'Banner of the Holy Ghost,' was from its colour, familiarly known as the Blue Blanket. On their return they dedicated it, at the altar of St. Eloi, in St. Giles's Church, St. Eloi being the patron saint of the hammermen of Edinburgh, the guardians of this celebrated banner. Further, Pennicuick tells us that in acknowledgment of a loyal service rendered him, King James III. confirmed the craftsmen in all the privileges of the Blue Blanket, which they obtained by permission as an immemorial possession, and he ordered it to be called in all times coming 'The Standard of the Crafts within Burgh.' At its appearance, not only they, but all the artisans within Scotland, are bound to follow it, and fight under the Convener of Edinburgh. In all cases of civil commotion 'up went the Blue Blanket.'"

Miscellanea.

Breaches of the Metropolitan Building Act.—At the last meeting of the Limehouse District Board of Works, the works committee reported, with reference to a request by Mr. Vulliamy (the Superintending Architect of the Metropolitan Board) that the District Board's surveyor would report any breaches of the Building Act occurring in the district and coming under his notice that it is not expedient that an officer of the Board should, under any circumstances, report to the officers of the Metropolitan Board without being so directed by the District Board. The committee were also of opinion that the District Surveyors under the control of the Metropolitan Board are the proper persons to undertake what was requested, and not the officers of the Board. The report was approved.

Building in New York.—According to the *Continental Gazette*, a new and useful paper, "permits have been taken out in New York for a larger number of new buildings erected or to be erected this year, than for any year since 1871. The new buildings include an unusually large number of small residences to be occupied by single families, and the erection of these is said to have stimulated builders to an improvement of "apartment" houses. New York's elevated railroads will help to extend the city in Philadelphia fashion, and possibly indirectly relieve the courts of suits about baby carriages, canary birds, and other nuisances in apartment houses."

New Masonic Hall, Shipley.—The Earl of Carnarvon opened a new Masonic Hall at Shipley last week. The building is situate in Wellcroft-court, Kirkgate, Shipley, and has been erected upon the site of the former New Inn, by Mr. Jonas Bradley. About 1,000*l.* have been expended upon the structure. The various works in connexion with the erection of the building were contracted for by the following tradesmen, viz.:—Mason, Mr. John Rhodes; joiner, Mr. George Yates; plumbers, Messrs. S. Rushworth & Son; plasterers, Messrs. Walsh & Son; decorators, Messrs. Sam Oddy & Son; gas-fittings, Mr. C. Howroyd. The architects for the works were Messrs. Jackson & Longley.

Hall for the London Scottish Corporation.—At a meeting of the Court of Governors of the London Scottish Corporation on the 2nd inst., considerable discussion arose upon the protests of Mr. Gordon Laing against the action of the Building Committee in connexion with the erection of the new hall. At a former meeting it was decided by the Court that the interests of the Hospital would be best advanced by rebuilding the hall and offices on the old site in Crane-court, Fleet-street; but Mr. Laing contended that this by no means authorised the committee to build certain warehouses which they designed to occupy the site of some dilapidated old houses adjoining, and from which they hoped to derive income. Mr. Laing submitted plans of his own, which he suggested would be more suitable than those of Professor Donaldson, the Corporation's architect, and he expressed a belief that support could be more easily obtained from the Scotch nobility and gentry, were a handsome structure decided upon. He also urged that the chapel should be sold to aid in defraying the expense of his plans. Professor Donaldson defended his designs. It was then announced that this subject must come before the Building Committee and the Court at subsequent meetings, when Mr. Laing could urge his views; but the latter announced his intention of withdrawing from the committee, and of moving a resolution at the next Court to give effect to his opinions.

A Fire Extinguisher.—Last week a private trial was made at Hendon of Messrs. Atkins, Allen, & Aston's patent for extinguishing fire. The apparatus consisted of a small drum-shaped stove, about 1 ft. 8 in. high and 1 ft. 2 in. in diameter, charged with a mixture of animal and vegetable charcoal and coke. This stove was connected by a 1-in. pipe with the inlet supply-pipe of a fire-engine. Instead of the exhaust of the pump drawing in water alone, it sucks in simultaneously water and the gases given off by the burning charcoal and coke, the action being somewhat similar to placing two straws in one's mouth, sucking in water through the one and air through the other, and then violently puffing out the combined air and water through a third pipe. It is claimed for the invention that the gases generated in the stove, although presumably largely composed of carbonic acid gas, in place of being a deadly compound, may be inhaled with no more adverse effect than is experienced when breathing in an atmosphere of ordinary steam. A mass, containing some 3,000 cubic feet of fuel, was set alight, and the exterior walls were from time to time damped. When the whole interior and exterior were thoroughly alight, a jet of the patentees' fluid was played upon the shed. The effect is said to have been instantaneous.

The Colonnade of Old Burlington House.—As some of our readers know, the stones which once formed the celebrated colonnade of Burlington House, Piccadilly, now lie prostrate in an out-of-the-way corner of Battersea Park. A correspondent of the *Metropolitan* calls attention to the neglected condition of these remains, and says:—"A little while ago it was suggested to the authorities that the colonnade might be placed so as to form an access, against the foot of Albert Bridge, for the Chelsea people to enter the park. They gruffly answered, 'It is only 210 yards for the Chelsea people to walk from the bridge to the present gate.' Would that 'My Lords' were made to do penance over these 210 yards of abominable loose gravel-stones; then, perhaps, they would sympathise with the multitudes of tender feet which suffer torment before they enter the paradise of the park."

Art and Technical Education at Bradford.—A letter has been received by the Bradford Corporation from the authorities at South Kensington, in reply to a memorial for aid in establishing a museum and art gallery in connexion with the Bradford Free Library, that the authorities will place at the disposal of the committee of the corporation six large cases, containing objects of industrial art.——A numerously-attended meeting of gentlemen interested in the Bradford trade was held on the 3rd inst., at the Bradford Town-hall, under the presidency of the mayor, Mr. B. Priestley, to consider the desirability of permanently establishing the recently-formed and already flourishing Bradford Technical School by the erection of suitable buildings for its location, at a cost of 25,000*l.* A subscription list was opened, and 12,000*l.* were subscribed at once.

Horticulture at the Paris Exhibition.—Horticulture is amply and powerfully represented in the Paris Exhibition, and fully justifies the prevision of the promoters, for everywhere over the vast spaces we meet with interesting and valuable illustrations of the possibilities of gardening. Not the least surprising and satisfactory of the horticulture features are the grass lawns, which were delightfully effective within three weeks of the date of the sowing of the seed, and now show a fine close sward of the most delicious green colour, delightfully harmonising the many gay scenes and curious objects by which they are surrounded. The successive competitions in the horticultural classes are so arranged that the gardens are perpetually changing in respect of their more striking features, so that we see at all times the best productions of the season, and the charm of freshness accompanies change and variety. The conditions that result in a series of magnificent displays have precluded the participation of British horticulturists in the competitions, for if their plants and flowers were not ruined by the *mal de mer*, the term of sixteen days, during which they must remain on view in the gardens, would be fatal to a large proportion of them, to say nothing of the expense and inconvenience of personal attendance during the full tide of our own exhibition season. Hence the French horticulturists compete amongst themselves with but little disturbance by foreigners of any country, and are utterly undisturbed by the intrusion of Englishmen. And the truth must be confessed that the affair goes very well without our aid; the classes are well filled, the competitions are spirited, and the results, generally speaking, are not only satisfactory, but splendid beyond all precedent. If the bedding system needed vindication, the clumps of celosias, standard zonals, flowering begonias, and the hedges of marguerites and petunias, would accomplish the vindication with startling completeness, but the fact is there is no vindication needed, except in behalf of those who have cast in their lot with a morbid idea that weeds should prevail even to the doorways of palaces, and who are, therefore, too far gone in foolishness to be open to conviction or worthy of any endeavour thereto. But the practitioners of bedding in this country may learn some fine lessons by a ramble through the gardens of the Exhibition while the flowers are in their prime, for there are effects to be seen that are at once simple, original, and magnificent, and that, perhaps, have never been attempted here, and would not possibly have been thought of in Paris except to meet the requirements of a bold schedule and a very peculiar case.—*Gardener's Magazine.*

Renaissance Wood-Carving. — In the Ecclesiastical Art Exhibition which accompanied the Church Congress in Sheffield, Mr. G. A. Rogers, of Maddox-street, London, has taken a good place. His work is becoming widely spread. In many of the London clubs his work is to be seen. In the oscillating cabin in the *Bessemer* steamship, Mr. Rogers carved the panels, and he also restored a number of carvings at Chatsworth, executed by Gibbons in the reign of Charles II. He was represented at Sheffield by four specimens. Besides these, Mr. Rogers exhibited a drawing of a pulpit in St. Michael's Church, Cornhill, carved by his firm; a very curious finial removed from an ancient bedstead at Bruges, and brought to this country by Mr. W. G. Rogers in 1815. Also a water-colour drawing of the reredos in Darlington Church, representing the Last Supper, realistically treated and worked in mosaic by John Dobbin, and presented to the church by the artist; a water-colour drawing of Lindisfarne Abbey; and another of Albert Dürer's parish church at Nüremburg. Of his own carvings we can speak well. The most important item was a floral pendant, similar to work in the Church of St. Mary-at-Hill, Thames-street, London. The execution has that peculiar finish which distinguishes Gibbons's school.

Dangerous Trades.—Another woolsorter in Bradford has been added to the already too numerous list of victims who have fallen a prey to the noxious emanations arising from Van mohair. It is satisfactory to learn that, at the suggestion of Dr. Bell, says the *Lancet*, Messrs. Ambler & Sons have given orders that for the future the mohair shall be washed or exposed to air twenty-four hours previously to sorting. Other firms will, it is hoped, recognise their duty at once, and take similar precautions for the cleansing of their wool.

Electrical Ignition of Blasting Charges—At a meeting of the Society of Engineers, held on Monday evening, a paper was read by Mr. George G. André on "The Application of Electricity to the Ignition of Blasting Charges." The author described the advantages afforded by electrical firing as of two kinds:— (1) Those due to the simultaneous discharge of the blasts, and (2) those resulting from the nature of the means of ignition. He showed that the total amount of work to be done was considerably diminished by simultaneous discharges, and that, as a natural consequence, the saving of time and money was proportionately increased; moreover, he proved that another distinct advantage lay in the fact that the whole face of the rock was brought away comparatively clean and smooth, no projections or bosses being left, as in the case of single blasts. The main advantage resulting from the nature of the means of ignition was the increased safety of the operator, owing to the fact that the charge could not possibly be ignited until he had had sufficient time to retire to a place of safety. With the ordinary safety-fuse, however, it is otherwise, the chargeman, after igniting the fuse, having to retire hastily from the spot, and always incurring a certain amount of risk. The author next explained that the majority of blasting accidents were due to the unexpected explosion of shots which had been approached by the men under the conviction that they had missed fire through a defect in the fuse. This difficulty is entirely removed by electrical firing, inasmuch as, in case of failure, the charge cannot possibly be ignited afterwards.

The Sanitary Condition of Paris.—The committee of inspection whose duty it is to examine into the sanitary condition of dwelling-houses in Paris, have made a report to the Prefect of the Seine on the work which they have done during the last eight years. They have visited upon the average 3,168 houses or dwellings every year, as against only 2,812 for the period comprised in their previous report. They have no right to inspect any houses except upon the receipt of a letter of complaint from one of the tenants or at the request either of the Prefecture of Police or of a medical man. For some time, the committee received very useful information as to houses the sanitary condition of which was unsatisfactory from the office of public relief and the medical attendants of the poor, whose duties took them into districts where improvements were most likely to be needed. The office of public relief has ceased to give this information, and the committee point out in their report how much this is to be deplored; for of the 40,000 families, or 100,000 persons, in receipt of relief, 15 per cent. pay less than 4*l.* per annum in rent, and 52 per cent. between 4*l.* and 8*l.* per annum. The committee, while asking that the supply of such information may be made compulsory, also point out the danger to health which arises from the sleeping of so many workmen in one room, known as a "chambrée," and the Prefecture of Police, which is alive to the evils of this practice, has asked the Municipal Council of Paris to grant a sum of 800*l.* for appointing several inspectors of furnished rooms to second the action of the present committee.

Sinking of Piles.—M. Ventillard, the port engineer of Boulogne, has introduced a new method of sinking piles. By it, we are told, "water is forced at high pressure through a gutta-percha tube into the sand and slush, which bubbles up and becomes loosened, when the pile can be driven into the ground almost by its own weight. The iron pointing of the piles is done away with, plain-pointed wood being sufficient, a pile 17 ft. long taking only from two to five minutes to be driven and rammed home." Supposing this to be a correct description of the *modus operandi*, it would be interesting to know whether piles sunk in this way will stand the severe strains to which those driven by the usual and more laborious method are sometimes subjected.

Buildings from Paris.— The Liverpool *Daily Post* says that a striking innovation in laying out land for building is to be carried out at West Kirby, a growing watering-place in what may be called the Cheshire suburbs of Liverpool. Messrs. Shelmerdine, architects, of Liverpool, have instructions to purchase a number of the houses now standing in the Street of All Nations, Paris Exposition, and to superintend their erection upon residential plots at West Kirby.

Supposed Italian Sculpture at Furness Abbey.—Mr. J. P. Morris, of Barrow-in-Furness, writes to the *Daily News*:—"In noticing the sale of the Right Hon. W. E. Gladstone's collection of pottery, which took place in 1875, a writer thus alludes to Lot 253:—

'This singular group recalls the sculpture of the same subject on the wall of the cathedral at Orvieto, attributed to some followers of the Pisani, where the Almighty, a full-length draped figure, appears to lift Eve by the shoulder, while her feet are still in the side of the sleeping Adam.'

Before seeing this notice, I had thus described, in a small handbook to Furness Abbey, a similar piece of sculpture in the hotel which was once a portion of the Abbey:—

'Over the fireplace in the coffee-room there is a bas-relief of the Creation, worked on a block of red sandstone of the neighbourhood. The scene presented by the artist is the moment when—

Adam's bride
Came from her closet in his side.

The Creator, in loose flowing robes, is bending over the pair, with his right hand upon the left shoulder of Eve, as she gradually rises from Adam's side. Four trees, with a few deer and other animals, form the background to the picture, and underneath is written—

Post orbem conditum sexto die creatur homo.'

The late T. A. Beck, esq., in his 'Annales Furnesiensis,' is of opinion that the sedilia and other ornamental portions of Furness Abbey were the work of Italian artists. This would seem to confirm that view."——Another correspondent says:—"The creation of Eve, was a favourite subject with the great Italian artists,—Giotto, Ghiberti, and Michelangelo having treated it. I wish here, however, to mention the alto-relievos of the Creation on the south side of Wells Cathedral above the west door. In one of these, Adam is seen in a reclining posture, while Eve, whose lower limbs are not disengaged from his body, raises herself in pleased surprise and stretches out her hands in adoring recognition of her Creator. The artist appears to have avoided the difficulty felt by many of his predecessors who had undertaken to represent the Almighty to the eye of sense, by abandoning the usual conception of the Ancient of Days, and resorting to that of the human appearance of Christ as if in the act of working a miracle, familiar in ecclesiastical art. Flaxman, who greatly admired the sculpture at Wells, has said of this particular composition that 'it is certainly the oldest, and not inferior to any of the others' executed by the Italian masters."

Sunday Art Exhibitions.—The Sunday Society's Gallery of Water-Colour Drawings at the old School Board offices, New Bridge-street, Blackfriars, was opened for the first time last Sunday afternoon from two p.m. till five p.m. Up to three o'clock about 100 visitors were present, but afterwards the gallery was inconveniently crowded, many of the prominent officers of the Society being present. The collection consists of 110 drawings and sketches of Swiss life and scenery by Mr. W. L. Thomas. In reply to inquiries made, it was stated that the committee of the Society intend opening a larger gallery early in the ensuing year, towards the accomplisment of which object they invite the assistance of all who are able to help either by pecuniary contributions or the loan of works of art. The present exhibition, we are bound to say, is but a small affair, up two pairs of stairs. We hope to see the experiment tried before long on a larger scale, and in a better locality. We have understood that facilities would be given at the Royal Albert Hall, and that some excellent private collections have been offered.

New Sanitary Apparatus.—An apparatus has been invented and patented by Mr. Joseph Robinson, inspector of nuisances at Aston, Birmingham, for loading night-soil, &c., direct from the barrow which brings it from the middens, into carts and wagons, thus entirely doing away with the stacking of filth in great heaps in our streets. The apparatus consists of a wooden frame upon which two rails are fixed in an inclined position, and upon these rails a carriage is placed. A box is carried in the centre of this carriage, into which the night-soil is placed direct from the ashpit. The whole apparatus weighs about 6 cwt., and is taken to the ashpit by simply chaining it to the back of the cart.

Chapel of Ease, Holloway-road.—This place of worship has been lately undergoing renovation. It has been cleaned and decorated simply, and at a comparatively moderate cost. The work has been carried out under the direction of Mr. G. M'Donell, architect, by Messrs. T. W. Smith & Son, of Islington.

St. Margaret's, Westminster.—A correspondent well entitled to speak desires to draw attention to the present condition of the remarkable painted monument there of Cornelius Van Dun, Yeoman of the Guard to Henry VIII. and other of our sovereigns, and who built twenty houses in Westminster "for poor women to dwell rent free." The writer says,—"Entering the church the other day, I turned my eyes to the north wall for the figure of Van Dun, but looked in vain; and I began to fear that, not content with sweeping away his almshouses from Petty France, his monument had been swept out of St. Margaret's. It is not so, however. On closer examination I found it; but to my horror it looked as if some parish Malone had whitewashed it. Unfortunately the case is worse. It is simply perishing by neglect. The outer and coloured portions of the bust have crumbled away, and no parochial authority appears ever to have taken the slightest trouble to preserve a monument highly curious in itself, and one which, erected about 1577, continued in good preservation well into the present century. The munificence to the poor of Westminster of him whom it commemorates ought to have secured its being properly cared for. Can nothing now be done to arrest its further decay? My mite towards the cost shall be forthcoming." He further asks, "Who pulled down Van Dun's 'twenty houses for poor women to dwell rent-free?' for where they stood in Petty France, now York-street, is occupied by the workhouse."

Illicit Commissions.—We referred last week (p. 1053) to the charges brought against Mr. Deas, engineer to the Clyde Trustees. At a meeting of the Trust on the 1st inst., the members decided to retain Mr. Deas as their engineer. By 17 to 5 they adopted the minutes of the Committee of Management, which set forth that Mr. Deas admitted fully, and with expressions of deep regret, that he had been guilty of what he at the time did not consider to be a wrong act; that he had voluntarily arranged to pay to the Queensland Government the amount of commission which he had received from the builders of a dredger, with interest; that the Committee resolved that Mr. Deas be requested to pay to the treasurer 500*l.* in respect of his services withdrawn from the business of the Trust; and that they had no ground for believing otherwise than that he had on all occasions acted honourably in the interests of the Trust in all dealings with contractors performing work for or supplying furnishings to the Trust. The amendment, which was lost, was that the minutes be not approved of, and that Mr. Deas be requested to hand in his resignation to the trustees.

Water as a Motive Power.—Messrs. W. H. Bailey & Co., of Salford, have recently introduced a mode of utilising water as a motive power. Their motor works under the ordinary pressure of the water sent through the street mains. In appearance it is somewhat similar to an ordinary horizontal steam-engine. It has an oscillating cylinder, with parts so arranged that the motion of the cylinder cuts off the supply of water at the end of the stroke, a reciprocating action being thereby obtained and imparted to the fly-wheel by the ordinary crank arrangements. One of the motors is working successfully, we are told, at the bottom of a colliery shaft near Bolton, the power being supplied by the water pumped up from the pit by the steam-engine. A large number of laden wagons are drawn up an incline with great ease by this means. The motion has also been utilised for sawing timber, printing newspapers, pumping water from low to high levels, and for many other purposes. The saving effected is not only in the difference between the price of the water which is used and that of the coal which would be consumed if the power were supplied by steam, but also in the labour required.

Poetry in the Paris Exhibition.—A reflection of the reporter of the *République Française* before Messrs. Doulton's house, in the Street of Nations, literally translated from the above journal, runs thus:—"How sweetly and calmly life must flow on in the bosom of these comfortable interiors, between the reading of the Bible on Sunday and of the *Times* on week days, the whole seasoned by an exquisite pudding, made by the hands of the blonde housewife, the dainty fragments of which are coveted by a cloud of babies!!!" This is something like writing. Here we get the genuine touch of nature which makes the whole world kin!

Working Men's College, Great Ormond-street.—After the usual recess, the new term of this college has just commenced, and a novelty appears on the prospectus in the shape of a series of Free Popular Lectures for Men and Women, to be given every Thursday evening, the object of the council being, as they frankly state, not only to supply free lectures of the highest class to the public, but to attract them to the college, so that they may become aware of the advantages so easily within their reach. How thoroughly the efforts of the council have been supported may be gathered from the fact that the list of lecturers comprises the names of such distinguished gentlemen as Prof. J. R. Seeley (author of "Ecce Homo"), Prof. W. H. Corfield, Prof. Lowne, Mr. Frederic Harrison, Mr. F. J. Furnivall (the editor of the "Leopold Shakspeare"), Dr. Casson, and also the Principal, Mr. Hughes, Q.C. The subjects selected by these gentlemen are both literary and scientific. We cannot doubt that the men and women of the classes to whom they are specially addressed will readily avail themselves of the opportunity afforded, which certainly merits the encouragement and support of all interested in the diffusion of sound knowledge.

Huts for Cyprus.—We understand that the War Department are arranging to ship from Woolwich to-day (Saturday), on board the *Craig Forth*, a number of huts of an elaborate character, intended to form official head quarters for the Lord High Commissioner, Sir Garnet Wolseley, and for the Brigadier General and Staff at Cyprus. These huts have been constructed with great despatch by Mr. George Shaw, of Westminster, and Messrs. Baker & Son, Lambeth; and the whole of the locks and door furniture, which possess some special features, have been supplied direct to the War Department by Mr. James Hill, of Upper Thames-street. The Governor's House comprises a suite of extensive reception-rooms, dining-rooms, boudoir, study, bedrooms, bath-rooms, and also includes rooms for the aide-de-camp and private secretary, together with servants' rooms, and every accommodation for an official residence.

Verdict of "Manslaughter" against Railway Directors.—The inquest on the people killed in the accident on the Cork and Macroom Railway was concluded last week, when the jury returned the following verdict:—

"We find that the deceased T. Mitchel Brew, Thomas Murphy, and James Rattray, were killed on the 8th of September, 1878, at Curraheen, by an engine of the Macroom train getting off the rails, and part of the train upsetting, owing to the defective state of the sleepers; and we find that directors, M. Massey, Sir John Arnott, Richard Tonson Rye, Timothy Mahony, Charles Roycroft, R. Mahony, Denny Lane, and William Harrington; F. L. Lyster, superintendent; and John Flynn, ganger, are culpably responsible; and that John Flynn is the least culpable, and we attach no blame to the deceased, James Rattray."

North Wales Slate Trade.—The slate trade of North Wales, which has been very dull for some time, several quarries being wholly or partly closed, now presents a slight improvement in certain districts. During August, 10,956 tons of slate were shipped from Carnarvon, against 7,682 tons for the corresponding month last year.

Paris Exhibition.—With reference to the terms of our notice of Messrs. Verity's fireplace, Messrs. Howard & Sons say "this fireplace was designed entirely, even to the working drawings, by our own draughtsman, Mr. W. F. Randall, and carried out by Messrs. Verity under his directions, and therefore belongs most exclusively to our exhibit."

Bas-Relief at the Walker Art-Gallery, Liverpool.—The second bas-relief on the front of the Walker Art Gallery was uncovered on the 1st inst. It represents the granting of the charter of incorporation by King John. The subject comprises several dozen figures, and they have been carved, from models prepared by Mr. Warrington Wood, by two Italian carvers.

Paving.—The Kensington Vestry has decided to pave a large portion of Brompton-road, and the whole of High-street, Notting-hill, and have entered into contracts with the Asphaltic and Hinson's Wood Paving Companies for about 6,000 yards each, and Messrs. Nowell & Robson for 8,000 yards.

An Open Competition for one situation as Architectural Draughtsman at an outport in the Department of the Director of Engineering and Architectural Works in the Admiralty will be held in London, under certain published regulations, on Friday, the 8th of November, 1878, and following days.

Ramsgate.—At a meeting of the Ramsgate Local Board, on the 1st inst., it was resolved, in pursuance of the report of the committee of the whole Board, to invite designs for constructing a road to unite the East and West Cliffs, premiums of 200*l.*, 100*l.*, and 50*l.* for the three best designs to be offered. It was agreed that the committee should engage an engineer, at a cost of not more than 50*l.*, to assist them in preparing the conditions of the competition.

Sunday Opening of the Philadelphia Exhibition.—The Permanent Exhibition at Philadelphia, in spite of opposition, has been opened to the public on Sundays. That the movement is a popular one is indicated by the large number of people who passed through the turnstiles each day. On the first Sunday about 6,000 were registered. On the second nearly as many visitors attended.

Concrete in Halifax.—The *Halifax Guardian* says that a large new reservoir and cooler, in concrete, have just been completed for Messrs. J. Aked & Son, Pellon-lane, by Messrs. Thomas Cordingley & Sons, concrete layers, of Bradford. Messrs. Utley & Grey are the architects. The coolers have hitherto been made in iron.

The Gaiety Theatre, Glasgow.—Mr. F. Matcham, of Rugby-chambers, Bedford-row (son-in-law of the late Mr. J. T. Robinson), has received instructions to prepare designs for the rebuilding of the Gaiety Theatre, Glasgow, for Mr. Charles Bernard.

The Architectural Association's Opening Conversazione for Session 1878-79 is announced for Friday, the 25th inst.

TENDERS

For Banstead School buildings, for the Kensington and Chelsea School District. Messrs. A. & C. Harston, architects. Quantities by Mr. C. Poland:—

Langmead & Way	£72,662 0 0
Longley	68,880 0 0
Martin, Wells, & Co.	68,318 19 0
Kirk & Randall	65,840 0 0
Higgs & Hill	62,980 0 0
Josolyne	57,965 0 0
Downs & Co.	57,690 0 0
Braid & Co.	57,500 0 0
Crockett	57,200 0 0
Hook & Oldrey (accepted)	51,698 0 0

For warehouse, Drummond-street, for Messrs. Trist & Palmer. Mr. W. T. Miller, architect:—

Langmead & Way	£1,600 0 0
Lamble	1,563 0 0
Longmire & Burge	1,535 0 0
Anley	1,527 0 0
Chapman	1,496 0 0
Patman & Fotheringham	1,495 0 0
Goodman	1,493 0 0
Brass	1,460 0 0
Higgs	1,350 0 0
Pickersgill	1,345 0 0
Taylor	1,289 0 0

For alterations and additions to 31, Marchmont-street. Mr. D. Cubitt Nicholls, architect. Quantities not supplied:—

Langmead & Way	£808 0 0
Collins	758 0 0
Axford	750 0 0

For sewers and roadmaking, Sir Spencer Wilson's Estate, Hampstead. Messrs. Farebrother, Ellis, Clark, & Co., surveyors:—

Anderson	£4,945 0 0
Keeble	4,870 0 0
Watts	4,715 0 0
Nowell & Robson	4,714 0 0
A. & C. Culverhouse	4,645 0 0
Killingback	4,580 0 0

For group of cottages, Hawks-hill, Wooburn, Bucks, for Mr. Alfred Gilbey. Mr. Arthur Vernon, architect:—

Banghurst	£799 0 0
Silver	776 0 0
Woodbridge	759 0 0

For a house at Ramsgate, for Mr. Mascall Newington. Mr. W. G. Osborne, architect:—

	Credit Old Materials.
Goodson (accepted) £584 0 0	£84 0 0

For Hadleigh House, High-street, Ramsgate, for Mr. H. Warren. Mr. W. G. Osborne, architect:—

Cowell	£3,460 0 0
Elgar	2,750 0 0
Harrison	2,675 0 0
Goodman (accepted)	2,609 0 0

For alterations and additions at The Elms, Minster, including new conservatory on Helliwell's system. Mr. W. G. Osborne, architect:—

Goodman (accepted)	£675 0 0

For villa residence South-Eastern-road, Ramsgate, for Mr. G. Keyte. Mr. W. G. Osborne, architect:—

Elgar	£650 0 0
Harrison	634 0 0
Osborn	630 0 0

For part repairs, &c., at the parish church, Stokenchurch, Oxon. Mr. Arthur Vernon, architect:—

Silver	£131 0 0
Selby	125 0 0
Taylor & Grist	90 15 0
Holland	65 0 0
Syred (accepted)	63 0 0

For additions to picture-gallery, Pall-mall. Mr. Dudley, architect:—

Hill & Co.	£1,024	0	0
Colls & Co.	987	0	0
Cooke & Co.	984	0	0
Newton & Trigg	757	0	0

For sewer and sewage outfall works near Harrow Station. Quantities by Mr. Whitaker:—

White	£7,320	0	10
Nowell & Robson	6,750	0	0
Neate	6,640	0	0
Thompson & Son	5,900	0	0
Larter	5,873	0	0
Botterill	5,677	0	0
Mackenzie	5,580	0	0
Shrubland	5,498	0	0
W. & H. Hill	5,236	19	5½
Rowland & Son	5,180	0	0
Cardus (accepted)	4,200	0	0

For alterations, additions, and decorations to 1, Eaton-place. Messrs. Drury & Lovejoy, architects. Quantities supplied:—

McLachlan	£1,795	0	0
Clemence	1,769	0	0
Bywater	1,696	0	0
Colls & Sons	1,684	0	0
Spake & Forman	1,573	0	0
Bowden	1,530	0	0
Higgs & Hill	1,444	0	0

Alterations and [additions] to 39, Craven-street, Strand, for Mr. Barnet. Quantities supplied by Messrs. Stoner & Son:—

Clemence	£729	0	0
Fairchild	726	0	0
Simpson	725	0	0
Patt	713	0	0

For building five warehouses at Armley, near Leeds, for the Earl of Dudley. Mr. J. Whittington, architect. Quantities by Mr. W. Hoffmann Wood:—

Smith & Son	£8,078	0	0
T. & W. Brown	8,040	10	0
Craven	8,000	0	0
Bishopp	7,994	8	6
Gard & Co. (accepted)	7,695	4	0

For the erection of stables and outbuildings at Grosvenor-road, Gunnersbury, for Mr. C. Brown. Mr. R. Tomlinson, architect. Quantities supplied:—

Barnes	£582	0	0
Whitman	532	0	0
Chamberlain Bros.	525	0	0
Osborne	508	0	0
Adamson & Sons (accepted)	486	0	0
Johnstone	485	0	0

For erection of proposed organ factory in the Metropolitan Cattle Market, for Messrs. Green & Savage:—

Sayer	£1,140	0	0!
Goodman	1,049	0	0
Beach & Co.	1,003	0	0
Piggersgill	995	0	0
Niblett	973	0	0
Williams	956	0	0
Taylor & Co.	950	0	0
Stamp & Bowtle	949	0	0
Linfield	936	0	0
Beale	935	0	0
Crockett	914	0	0
Edgar	854	0	0
Sampson & Parrish	750	0	0
Eady	712	0	0
Somerville & Hill (accepted)*	562	0	0!

* This tender was read 362*l.*, instead of as above, the 5 being mistaken for a 3.

For blinds to new premises in Cross-street, Mould-street, and New Market, Manchester, for Mr. Haworth. Mr. A. Waterhouse, architect:—
Guynan & Son (accepted).

For new premises and foundry, Brewery-road, Islington, for Mr. J. A. McLean. Mr. J. Lockhead, architect:—

Woodward	£2,465	0	0
Boyce	2,176	0	0
Niblett	2,171	0	0
Lane	2,160	12	0
Silby	2,140	10	0
Gould & Bradd	1,959	0	0
Crockett	1,947	0	0
Aitchison & Walker	1,837	0	0

For alterations, &c., at 69, Pall-Mall, Mr. Josiah Heale, architect:—
Langmead & Way (accepted).

For the erection of new schools in Oakwellgate, for the Gateshead School Board. Mr. T. Oliver, architect. Quantities by Mr. George Connell:—

Grey & Humble	£5,132	12	10!
Inglis & Reak	4,280	0	0
Carrick	4,231	15	0
Town Bros.	3,926	14	11½
Gibson	3,836	13	10
Bradshaw	3,805	0	0
Johnstone	3,732	1	9
R. & J. J. Harrison	3,715	17	8
Armitage	3,698	17	0
Robson	3,691	17	0
Galy	3,606	18	0
Bell	3,564	3	0
Millar	3,531	16	7
Foggin	3,529	0	0
Veitch	3,528	3	8
Nicholson	3,500	16	2
Hutchinson	3,415	19	0
Elliot	3,350	0	0
Miller	3,349	10	5
J. Smith	3,349	2	8
Allison	3,347	13	0
Ferguson	3,272	11	0
Henderson & Parkinson	3,264	14	0
T. & R. Lamb	3,250	0	0
Broomhead & Keswick	3,203	9	1
Richardson & Co.	3,170	19	7
J. Atkinson	3,110	16	8
Burton	3,083	15	6
W. L. Smith	3,075	5	0
Robson & Trimble	3,057	11	6
Leighton	3,041	0	0
H. Atkinson	2,999	5	0
Grisdale	2,982	0	0
N. & R. Reed	2,974	4	8
Clark	2,854	3	10
Greason & Stockdale	2,811	17	3
Thompson	2,802	3	0!

For heating apparatus:—

Watson & Son	£80	0	0
Dinning & Cooke	73	0	0
Donkin & Nicholl	72	0	0
Walker & Emley	62	0	0

For new schools, Somerford-street, Bethnal-green, for the London School Board. Mr. E. R. Robson architect:—

Grover	£13,303	0	0
Williams & Son	12,989	0	0
Hook & Oldrey	12,960	0	0
Kirk & Randall	12,531	0	0
Sheffield & Prebble	12,487	0	0
Brass	12,425	0	0
Hobson	12,379	0	0
Pritchard	12,319	0	0
Cox	12,177	0	0
Tongue	12,111	0	0
Boyce	11,990	0	0

For the erection of endowed school for girls, Loughborough, exclusive of the department of the sick and the laundry and boundary-walls. Messrs. S. C. Gilbert and S. R. Stevenson, joint architects:—

Barnes	£5,250	0	0
Jewsbury	4,708	0	0
Johnson Bros.	4,599	19	0
Slater	4,434	14	3
Bromage	4,281	10	0
Needham	4,168	10	0
Jelley	4,160	15	9
Moss	4,109	0	0
Black	4,100	0	0
Harding	4,099	0	0
Main	3,950	10	0
Wheatley & Maul[illegible]	3,940	0	0
Clipsham (accepted)	3,759	0	0

For the erection of a new Police-station and Court-house at Grays, Essex. Mr. Henry Stock, architect. Quantities by Mr. J. Marsland:—

Glasscock	£4,175	0	0
Greenwood	4,130	0	0
Wood	3,840	0	0
Rider & Son	3,818	0	0
Gardner & Son	3,810	0	0
Wells	3,800	0	0
Parmenter	3,757	0	0
Capon	3,685	0	0
Saunders	3,565	0	0

For additions, &c., Hughenden Cottage, Bucks, for Sir C. L. Young, bart. Mr. Arthur Vernon, architect:—

Silver	£1,195	0	0
Woodbridge	1,097	0	0
Hunt	1,026	0	0
Biggs	972	12	6
Loosley	946	11	0

For the erection of a school at Penrhyndendraeth. Mr. Thomas Roberts, architect:—

Hughes	£695	0	0
Jones	690	0	0
E. Williams	666	0	0
R. J. & M. Jones	584	5	5
Evans & Co.	538	0	0
R. Williams	500	10	0
Pritchard	497	19	8
Gough	479	0	0
Rees (accepted)	465	0	0

For the erection of a leather factory in Long-lane, Bermondsey, for Mr. C. F. Fowler. Mr. G. Green, architect. Quantities by Mr. W. Grayson:—

Wall	£11,395	0	0
Downs	11,355	0	0
Hare	11,349	0	0
Taylor & Co.	11,341	0	0
Sharp & Co.	11,325	0	0
Smith & Co.	11,315	0	0

For widening the Green-lanes frontage, and laying in surface water-drains and gullies, on the Eaton Park Estate, Palmer's-green, for Mr. Thos. Kelsey. Mr. Fred. C. Kettle, surveyor:—

				Felling, &c., Trees, each.		
Dunmore	£635	0	0	£1	0	0
Bloomfield	621	18	6	0	15	0
Finn	535	0	0	—		
Green	394	0	0	0	4	6
Pizzey (accepted)	379	10	0	0	7	6

For brick culvert and diversion of Pymm's Brook, for the British Land Company (Limited), on their estate at East Barnet. Mr. Henry B. Michell, surveyor:—

Chick	£1,390	0	0!
Harris	1,325	0	0
Ford & Norris	1,225	10	0
Pizzey	1,199	0	0
Acock (accepted)	650	0	0!

For pulling down and rebuilding shops, High-street, Barnet, for Mr. Henthall. Mr. Edwin W. Brooking, architect:—

Baughan	£420	0	0
Pattison	410	0	0
Miller	389	0	0
Butler (accepted)	365	0	0

For alterations and additions to the Small Pox Hospital, Homerton. Messrs. A. & C. Harston, architects:—

Wheeler & Co.	£1,695	0	0
Norris	1,577	0	0
Cook & Green	1,393	0	0
Wood	1,3 0	0	0
Upson	1,290	0	0
Wise	1,280	0	0
Ivery	1,175	0	0

For new fire-engine station in Park-street, Thame, Oxon. First Contract. Mr. H. J. Heath, architect:—

Wells (accepted)	£264	0	0

For alterations and additions at Nos. 89 and 90, Cadogan-place, and 162, Sloane-street, Chelsea, for Messrs. E. J. Barker & Co. Mr. Gill, architect:—

Blandford & Co. (accepted)	£1,450	0	0

For new shop-fronts and repairs to Nos. 62 and 63, Headon-street, Pimlico, for Messrs. Randell Brothers. Mr. Jones, architect:—

Blandford & Co. (accepted)	£160	0	0

For alterations at the Albion Tavern, Albion-road, Dalston:—

Lancaster	£132	0	0
Taylor & Parfitt	129	10	0
Smith	119	0	0

TO CORRESPONDENTS.

A. V.—C. S.—L. & W.—J. H. B.—J. O. B.—M. A.—W. F. S.—B. K.—S. R. S.—H. H.—F. C. & Sons.—F. C. K.—J. S.—W. C.—G. G.—A. A. C.—T. R.—W. J. B.—W. & M.—T. B.—C. W. W.—F. B.—H. B. M.—T. O.—W. G. O.—F. M.—P. P.—W. L.—D. B.—C. & S.—J. P.—E. C. B.—W. H. P.—Piano-Forte Reform.—G. & S.—Model Easy Chair.—Domestic Sufferer.—"Chairs to mend."—C. F. W. (very doubtful).—A. H. & Son (we should be inundated with more advertisements).—The Piano-Forte, and Furniture (several communications on these subjects shall have consideration).

All statements of facts, lists of tenders, &c. must be accompanied by the name and address of the sender, not necessarily for publication.

Nota.—The responsibility of signed articles, and papers read at public meetings, rests, of course, with the authors.

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